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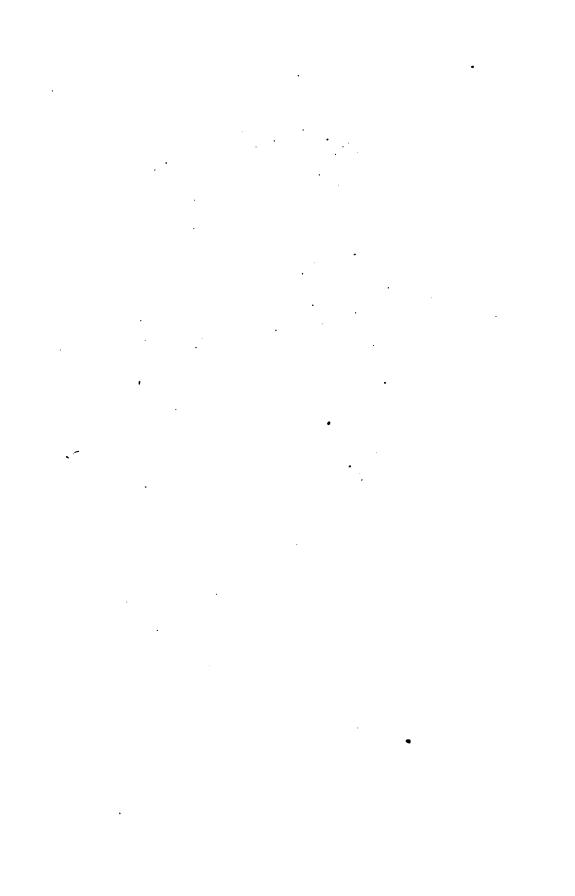
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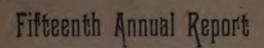




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OF THE

Buffalo Gity Water Works

STATE OF NEW YORK.

POR

THE YEAR 1883.

BUFFALO : TIMES PRINTING HOUSE, 191 MAIN STREET.

1884.



FIFTEENTH ANNUAL REPORT

OF THE

BUFFALO CITY WATER WORKS

BUFFALO, NEW YORK,

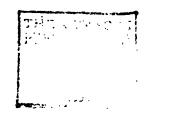
FOR

THE YEAR 1883.

BUFFALO:
Times Printing House, 191 Main Street.

1883.

& BUFFALO PUB. LIB' Y



OFFICERS-1883.

Board of Water Commissioners,

JAMES N. SCATCHERD, Chairman. LOUIS P. REICHERT, Secretary. JAMES RYAN.

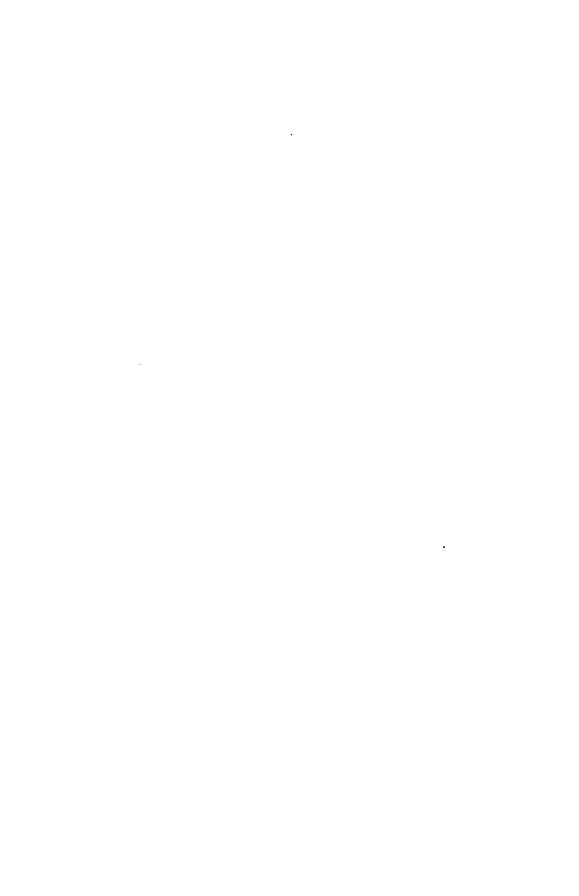
Superintendent,
LOUIS II. KNAPP.

Cashier,
G. C. GRIMARD.

Registrar,
JOHN T. REES.

Clerks,

JOHN SCANLON, CHAS. H. BIEBER, C. A. PERRY.



Commissioners' Report.

To the Honorable the Common Council of the City of Buffalo:

GENTLEMEN: In compliance with Title fifteen, Section ten of the City Charter, we have the honor herewith to submit to you the Fifteenth Annual Report of the Buffalo City Water Works.

In presenting this report we have the satisfaction of stating that for the first time in the history of the Water Works they may be fairly considered self-sustaining, and this notwithstanding within a short time a reduction in rates has been made to domestic consumers of 33 ½ per cent. and the meter rates to manufacturers and railroads has been cut from an average of nine cents down to three cents per 1,000 gallons.

The works in all departments have been kept in thorough repair, and are now in excellent working condition. Removing the obstructions from the tunnel, repairs to coal and pumping houses, engine and boilers, fencing the grounds at the Holly House, and tile draining 800 hydrants, to prevent them from freezing, has largely increased expenditures.

The cost of this extra work has all been included in the extension and current expense accounts, leaving no floating debt standing against the department for supplies or labor.

A special extension of 8.500 feet of sixteen-inch pipe was ordered in Main street by your honorable body, and an appropriation of \$50,000 for that and general extension purposes was included in the estimates. This extension cost \$41,449.84.

The total requirements of the Water Department for 1883, apart from making provisions for reducing the water debt, was:

For interest on water bonds Supplies and labor for current expenses \$ 87,193.53 Supplies and labor for extensions 200,029.90	\$186,986.74
\$287,223.43 Less supplies on hand	255,223.43
Total revenues collected from all sources,	\$442,210.17
•	
including frontage tax	426,353.57
	\$15,856.60

This exhibit shows that while \$50,000 was placed in the estimates for the benefit of the Water Works, but \$15,856.60 was used.

Whether there might fairly be any difference of opinion or not as to the Water Department being self-sustaining, we feel the showing is good enough to warrant a concession in rates to the domestic consumers of ten per cent., one-half in May and one-half in November bills, and we do so recommend.

WATER DEBT.

The water debt has been reduced \$100,000 during the year, leaving the amount of debt on January 1, 1884, \$2,871,882.00. We submit for your consideration, whether instead of paying off this debt as it matures by drafts on the general fund, it might not be better to refund the principal at a lower rate of interest, as it becomes due, and allow the debt to remain as it is until the surplus revenues arising from water rates would extinguish it. At the rate water rents have increased for the past two years, the receipts from the Water Department within five years will be over \$600,000 annually, and, at the same time, our manufacturers, railroads and domestic consumers will be receiving their water supply at lower rates than are charged in any other City.

FRONTAGE TAX.

The exact amount that will be realized from this tax cannot be given until the May bills are rebated.

The frontage tax has been the means of greatly increasing the number of water consumers. There was very little difficulty experienced in rebating the bills—much less than might have been expected.

An arrangement between landlord and tenant, whereby the owner of the premises would settle the water bill, seems to be all that is required to facilitate rebating the tax.

We would suggest that the time for paying the frontage tax be extended to the tenth day of November. This, to a very considerable extent, would relieve the water consumers from making payments on their water bills before they were due.

New Pumping Engine.

A contract has been entered into with the Holly Manufacturing Company for a fifteen million gallon Gaskill engine, six boilers, chimney and foundation for the engine, for the sum of \$83,000. The pump is to be completed and set up by November next. This engine will be placed in the lower pumping house, and assigned to high service duty.

The purchase of this engine will enable the Commissioners to extend the high service district to all parts of the City above the elevation of the reservoir supply.

This will add eighty-seven miles of pipe to the fifty miles of high service now in use, making 137 miles of high service, with abundant pumping capacity to supply it.

COAL AND BOILER HOUSE.

Plans for a new coal and boiler house are now under consideration. The coal house will be arranged so coal can be delivered by rail or canal; at present coal can only be received by canal. This makes it necessary to lay in at least six months' supply before close of canal navigation each year.

THE ISLAND.

For the purpose of extending the water supply to that portion of the City laying between the river and City ship canal, the pipe was distributed in Ganson street during the season of 1881, and in the spring of 1882 a sixteen-inch main was laid in Chicago street, from Exchange to Ohio street, and the pipe for the remaining distance to the river is now laying on the street. The water pipe cannot be laid across the river to Ganson street until a right of way has been secured between the river and Ganson street.

The Commission appointed to ascertain compensation due to the owners of the property, made the award so excessively high (\$1,000 per foot) the Water Board asked to have all proceedings quashed, and it was done. The fee of the right of way for laying this pipe is not necessary. The right to lay the pipe, with the privilege of access to it for the purpose of repairs, when required, is all that is needed. The Water Board are in favor of laying the pipe as soon as a right of way is secured on reasonable terms.

RESERVOIR SUPPLY.

There is much of the reservoir supply very unsatisfactory on account of there not being head enough to carry the water upon the second floors. It is the intention of the Board to remedy this as soon as the new

engine is ready, by placing, as far as possible, all consumers who are at an elevation of forty feet or more over the lake on the high service.

This arrangement will increase the high service, and correspondingly decrease the reservoir supply.

Increasing the high service district, will call for a 24inch main from the pumping house through Hampshire
street to Ferry street, and a 16-inch main in Ferry
street to the 16-inch Main in Main street, thereby
strengthening the poor house supply. On the east
side it will be necessary to lay a 24-inch main in
Virginia, from Main to Jefferson streets. The consumption of water is increasing more rapidly on the high service than on the reservoir supply. Mains for supplying
this increase should be laid in advance of the demand,
so that when the water is called for, it will be ready for
distribution.

DUMPING GROUNDS.

The dredging from the harbor and garbage dumped in the river has not generally been carried below the inlet pier. Much of the water pumped this fall has been contaminated by the filth coming from the dumping ground, during heavy gales.

This serious cause of complaint ought to be dealt with in a manner that would effectually prevent any further dumping in the river, above the water supply.

WATERPHONE.

The use of this device for detecting waste and leaks verifies the estimates generally made, which places the loss of water from these causes at from forty to fifty per cent. of all the water pumped.

The use of water, however lavish it might be, should not be considered wasting it, but allowing water to run, even in small quantities without using it, is wanton waste. An ordinary water closet, if allowed to run, will waste in 24 hours 7,200 gallons; at this rate the capacity of all the closets for wasting would be 43,984,800 gallons daily; and this the entire pumping power of the works (40,000-000 gallons) could not supply.

Persistency in allowing water to run, or in neglecting to repair leaks, after attention has been called to the waste, is a flagrant evil for which there is at present no adequate remedy. In many cities a fine for each offense, of from three to five dollars, imposed by the Water Board, hashad a very salutary effect in correcting waste.

The Water Board, should have authority to deal promptly with this increasing evil, by either fine or shutting off the water, or both, as the abuse might seem to demand.

For particulars in detail, respecting the entire department, we refer you to the report and tables furnished by the Superintendent and Registrar.

All of which is most respectfully submitted

JAMES N. SCATCHERD, LOUIS P. REICHERT, JAMES RYAN,

Water Commissioners.



REPORT

OI THE

SUPERINTENDENT.

1883.

January 1, 1884.

To James N. Scatcherd, Louis P. Reichert and James Ryan, Water Commissioners:

Gentlemen: Herewith is presented a report showing the operations of the department, and the detail statements of the same, for the year 1883.

INLET PIER.

On three occasions the light which is required to be maintained on the inlet pier during the season of navigation was carried away by portions of timber rafts passing over it. The stone work has been damaged to a considerable extent. In order to protect the light and pier from future injury the top should be covered with boiler plate, and iron guards placed on the slope, so as to prevent the logs from sliding over.

TUNNELS.

As intimated in your last report, a thorough examination was made of the old and new tunnels by sub-marine divers, with the following result:

Considerable quantity of loose stone was found in the old tunnel at Bird Island pier, and removed. The new tunnel, at this place, was reported without any obstructions, but the timber work was found to be badly

worn away under the water by the action of the ice of previous winters. It will be necessary to replace the timber and to repair the stone work of both tunnels at this point.

At the inlet pier a very serious obstruction was found to exist at the bottom of the shaft. The entrance to the tunnel was almost closed by loose stones and gravel. About forty yards of material was removed, and the tunnel put in good shape.

Between the bottom of the pier and the bed rock of the river, on the Canadian side, the original concrete was washed out, leaving an opening five inches high and extending around the shaft nearly six feet. Through this opening gravel, loose stone, cinders, etc., had been carried in by the action of the water. This opening was closed by filling the space with dry pine, and securely fastened on the inside by an iron strap, extending over the entire space. In several places loose portions of the roof of the tunnel were removed by the divers with an iron bar, which were solid when the tunnel was driven, and, at that time, would have required blasting to remove them. This shows the action of the water in loosening the rock, and the necessity of having the tunnel, at this place, occasionally examined, and the loose stone, if any, removed.

The tunnel was closed by ice January 15th and 19th and February 15th. The ice was immediately removed. It is now believed that (on account of the increased

water way secured) there will be no further trouble from ice closing the inlets.

Engines.

The engines are all in good working condition, and no interruption in the supply has occurred during the year.

Engine No. 1 (10,000,000 Worthington), requires new foundations, the steam and water cylinders placed in line, and the working parts re-adjusted.

Engine No. 2 (15,000,000 Worthington), requires new rubber valves for the pumps. Otherwise no alterations are necessary.

Engine No. 3 (15,000,000 Worthington). This engine, capable of supplying either service, has been in use through the year, and no alterations are necessary.

Shepard Engine (6,000,000). This engine has not been used for three years and is practically useless, and should be taken down and sold for old iron.

Holly Engine No. 2 has been thoroughly overhauled and lined up, provided with a new air-pump, and placed in first-class condition, all of the work being done by the employes of the upper engine house, under the supervision of the Chief Engineer. All the engines are now apparently as good as when purchased.

BOILERS.

All the boilers have received very extensive repairs, which was found necessary by the neglect of former years. A large increase of duty has been obtained over

the record of previous years. This is the result of close attention to detail, careful management and increased temperature of the feed-water. Several improvements are contemplated, principally in the boilers, and when carried out still better results are expected.

REPAIRS, ETC.

The fences around the reservoir were repaired and repainted, the brick lining relaid and replaced, a new fence constructed around the lot on which is located the high service engine, the lot graded, etc. The roofs of all the buildings have been repaired, sewer laid to carry off the surface water, and the buildings, including the roofs, etc., painted.

A wooden bulkhead was constructed in the coal shed to prevent the coal from forcing out the south and west walls, which had become too weak to support the weight of coal when filled.

A temporary platform for storing coal for use the present winter was also constructed on the north side of the pumping house.

VALVE HOUSE.

The valve house has been completed, and the connections made with the different pipes, thus making Worthington Engine No. 1 (10,000,000) and No. 3 (15,000,000) available for the high service.

The valves are all under cover, and the room heated to prevent them from freezing.

DISTRIBUTION.

Nearly nineteen miles of pipe were laid, of which seven miles and 2,830 feet was on the high service, and eleven miles and 2,305 feet on the reservoir. The total length of pipe in the City is 150 miles and 529 feet.

PIPE LAYING.

All work has been done by the department by day labor. The cost of excavating, including refilling of the trenches, has been thirty-one cents per cubic yard, and the work has been done in a much cheaper and more satisfactory manner than by the contract system.

No complaints have been received of the obstruction of streets and sidewalks from dirt from the trenches, as formerly when this work was done by contract.

REPAVEMENT.

All repavement has been done at four cents per square foot, including material.

HYDRANTS.

There was placed 114 hydrants on new work, and 194 old hydrants were replaced with new ones, making the total in the City 1,407. Of this number about one-half are drained. The remainder should be completed as early as possible.

For the purpose of preventing the hydrant from freezing, all new hydrants are provided with four inch drain-

tile, leading from the hydrant to the sewer. In case no sewer exists, the drain-tile is laid for a distance of ten feet, thus assisting the drainage of the hydrant to that extent. There are now only two styles of hydrants used, instead of the dozen different kinds, as formerly.

It is believed the hydrants in the business portion of the City are in as good condition as is possible to make them. The care and maintenance of them should belong to the Fire Department.

STREET SPRINKLING.

In order to avoid the expense, annoyance and danger of the hydrants being out of repair and disabled by constant use for this purpose, it would be better to have independent places for the carts to obtain their supply. The complaints arising from the mud and water around the hydrants in the business portion of the City, caused by the present method of obtaining water, would be entirely avoided.

VALVES.

There were placed 220 new valves in the mains. Several of the large valves have been provided with a stone and brick wall around them, and a strong iron platform placed over the top, provided with a man-hole, thus enabling repairs of all kinds to be made without disturbing the streets. This is the best way of arranging all valves, and is only prevented by the expense. All

valves set are provided with iron cases. No wood of any kind is used in any of the fixtures.

METERS.

There are 105 meters in use. The expense of keeping same in repair during the year was \$1,503.96. Although the care and maintenance of these meters are expensive, they tend greatly to reduce the waste of water, and in equalizing the rates.

CONSUMPTION.

The average daily consumption of water has been 23,475,192 gallons, or 130 gallons per head of population. The average daily consumption of the cities of Glasgow, Liverpool and Manchester is thirty-five gallons, against a former average of fifty gallons per head, the result of rigid inspections; the cities of Boston, New York and Chicago (only partially inspected) is 100 gallons per day; Providence, R. I., probably the best water-supplied city in the country, is thirty-six gallons per day. Of the 11,000 services, 6,000 are metered. The different systems of preventing waste that have been successfully tried are as follows, viz.:

DIRECT MEASUREMENT SYSTEM.

By the use of meters, as in the city of Providence.

THE BELL WATERPHONE.

Detecting waste by sound, including house to house inspection, as used in Cincinnati.

THE DEACON SYSTEM.

An instrument by means of which the quantity of water used in a given district is recorded upon a diagram.

THE CHURCH WASTE DETECTER.

A peculiarly constructed stop cock applied to each service, attached to which is a pressure gauge, which records the amount of water used.

The use of meters on all large supplies, a rigid house to house inspection and the enforcement of all penalties would probably reduce the average supply of the City to about 60 gallons per day, with a night rate of about 15 gallons per head. This would reduce the consumption 100 per cent., and not decrease the revenue.

SERVICES.

There was placed in the mains 2,650 taps for new services, making the total number to date 16,029.

FIRE HYDRANTS.

Direct connections have been made with the mains with four of the street reservoirs for fire purposes. It is claimed this manner of furnishing water for fires has many advantages over the hydrants.

FREE RESERVOIRS.

A self-closing hydrant was placed at the corner of Elk and Chicago streets; from its working so far good results have been obtained. If found satisfactory all hydrants of this class (where necessary) should be changed to this pattern. The hydrants that are located on streets in which pipes are laid (with but few exceptions) should be abandoned. They are a source of great annoyance to the department, and there is no reason why they should longer be maintained at public expense.

MAPS.

Work on the detail maps is progressing, and is about half finished, and when completed will furnish, in accessible shape, a record of all the pipes, valves, hydrants, services, etc., through the streets and to each house or premises supplied with water.

REPAIRS.

More than the usual attention has been given to the repair of valves and hydrants. The sum of \$15,000 was expended in draining old hydrants, and the necessary repairs in the central portions of the City.

For further information reference is made to the following detail reports.

LOUIS H. KNAPP,

Superintendent.

OPERATIONS

OF THE

REGISTRAR'S DEPARTMENT,

FOR

1883.

Office No. 1 CITY AND COUNTY HALL. BUFFALO, January 1, 1884.

James N. Scatcherd, Louis P. Reichert, James Ryan, Water Commissioners:

GENTLEMEN: Herewith please find detailed statement, showing fully the financial standing of the Water Department, on January 1, 1884, together with other statistics compiled during the year.

Very Respectfully,

JNO. T. REES,

Registrar.

REPORT.

COST OF WATER WORKS FROM PURCHASE TO DATE.

Original Purchase	\$ 705,000.00
Dodge Farm	79,382.00
Extensions	2,934,498.05
Interest on Bonds	2,427,975.66
Running Expenses	1,121,613.50
On hand January 1, 1883	170,636.16
Accounts Due	694.44
Total	
Water Rates	\$ 3,0 6 0,269.66
Bonds	
Taxes	1,307,648.15
Total	7,439,799.81

PRESENT STANDING OF WATER WORKS ACCOUNT.

Original Purchase	\$705,000.00
Real Estate	86,657.00
Engines	233,217.05
Holly Pumping House	12,092.25
Holly Pumping Machinery	39,000.00
New Engine House	70,472.00
Gas Well	9,406.44
Inlet Tunnel and Pier	521,823.15
Main Pipes, Branches, Hydrants, etc	2,041,212.16
Total	\$3,718,880.05

WATER BONDS.

Bonds outstanding January 1, 1884, issued for the purchase, extension and improvement of the Water Works.

Date of Issue.	Amount	When Duc.	Date of Issue.	Amount.	When Due.
May 1, 1868 Oct. 1, 1869 Oct. 1, 1870 Jan 1, 1870 Oct. 1, 1870 Oct. 1, 1871 Aug. 1, 1871 Oct. 1, 1871 April 1, 1872 Oct. 1, 1872	100,000 150,000 100,000 145,000 100,000 100,000 50,000 50,000 100,000 100,000	May I, 1884 July I, 1885 Oct. I, 1886 Mar. I, 1887 June I, 1889 Oct. I, 1880 Jan. I, 1891 Aug. I, 1891 April I, 1884 April I, 1887 July I, 1890 Oct. I, 1892 Dec. I, 1882	Sept. I, 1873 April I, 1874 July I, 1874 Aug. I, 1874 Oct. I, 1874 Aug. I, 1875 Jan. I, 1876 July I, 1876 Sept. 2, 1878 Apr. 25, 1879 Apr. 26, 1880 July I, 1880 Sept. I, 1880 Nov. 26, 1880 Apr. 25, 1881 July I, 1883	200,000 100,000 100,000 100,000 79,382 100,000 50,000 100,000 100,000 100,000 64,000 100,000 42,500	Sept. I. 190 April I, 190 Suly I, 190 Aug. I, 190 Jan. I, 180 July I, 180 July I, 189 Sept. 2, 189 Apr. 25, 189 Apr. 26, 189 July I, 190 Sept. I, 190 Nov. 26, 189 Apr. 25, 190 July I, 188

INTEREST PAID ON WATER BONDS DURING 1883.

January 22d	\$ 8,750.00
February 19th	13,750.00
March 19th	34.103.37
April 23d	6,215.00
May 21st	10,500.00
June 18th	21,500.00
July 16th	22,500.00
September 17th	34,103.37
October 15th	2 715.00
November 19th	10,500.00
December 17th	22,350.00
Total	186,986.74

REVENUE.

The total revenue received from all sources was \$426,533.93. This is an increase over the previous year of \$63,771.86. Following itemized statement shows source of revenue, viz.:

Water for City purposes	\$	100,000.00
From Domestic Consumers and Manu-	•	
facturers not metered \$	1 76,646.22	
Add Frontage Tax rebated	35,597.54	212,243.76
From Manuf's and Railroads metered		64, 164.84
From Flushing Sewers		125.05
From Street Sprinkling		1,527.31
From Street Paving		168.50
From Circuses		30.00
From Corporation Cocks		5,382.00
From Turn-on Fees		79.00
From Rent Dodge Farm		1,581.00
From Builders		1,438.98
Experts' Fees (H. R. W.)		500.00
Frontage Tax	71,811.24	
Less Rebated	35.597.54 ₹	36,213.70
Premium on Water Bonds		180.36
	\$	423,634.50
SALE OF OLD MATERI	AL.	
F. S. Pease 5 oil barrels	·· \$ 3·75	
Jno. Monroe	4.50	
F. S. Pease6 oil barrels	3.50	
D. Ullman230 lbs. old brass.	25.30	
M. LichtensteinScrap iron	т.8о	

G. B. Hayes.....19,983 lbs. scrap iron

M. Lichtenstein.....104 lbs. old brass...

54.61

142.73

10.40

Norton&Evans st.

15.00

Evans Elevator......Chang'g hydrant cor.

B. C. RumseyNew valve and labor		
at ice pond	\$22.73	
H. C. FrenchChanging hydrant		
front of 1109 Del-		
aware avenue	15.02	
E. S. Hawley	·	
half expense	30.26	
Forest Lawn Cemetery		
Association Branch	25.40	
L. L. CrockerOld hydrant	10.00	
James Adams Moving hydrant	15.00	
Charity OrganizationChanging hydrant	10.00	•
Jubilee Water Works71/4 days' labor with		
engine	14.50	
Park CommissionersBranch at Humboldt		
parkway	25.26	
•		\$359.17
N. Y. Sleeping Car Co Changing hydrants.	35.39	
L. H. Knapp hours' work	.40	
Firmenich Sugar Refin-		
ing CoBranches to works	778.90	
C. Klinck 1½" Union meter.	42.00	
D. L. & W. R. R. Co Removing hydrant.	4.50	
Plumb, Burdict & Bar-		
nardBranch to works	204.00	
John D. SmithValve for City Hall.	30.54	
D. L. & W. R. R. Co Moving hydrant	71.94	
D. L. & W. R. R. Co Moving hydrant	13.11	
D. L. & W. R. R. Co Moving hydrant	54.59	
N.Y., L.E. & W.R.R.Co Work at Howard and		
Babcock streets	634.42	
James RyanBlowing out pipes	1.40	
Buffalo Alcoholene W'ks.Connection	13.02	1,884.21
Total		A (
10tai		\$426,533.93
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Total.		
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COMPARATIVE STATEMENT.

Revenue received, coal consumed and water pumped annually for thirteen years:

			C1			1	ipe.	Ea	ch yea
Year.	Revenue.	Expenses.	Coal Consum'd Tons.	Water Pumped. Gallons.	Extensions,	Miles.	Feet.	Miles.	Feet.
1871	\$124,865.00	\$77,456.95	3,645	2,775.752,490	\$284,297.84	67	4,644		
1872	138.150.00	69,228.74	4,546	3,226,891,140	355,492.46	77	2,921	19	3.557
1873	168,267.20	77,747.60	4,720	3,329,193,162	308,600.46	81	4,912	4	1,991
1874	176,219.10	66,218.50	2,852.50	3,040,012,107	307,355.64	86	4,905	4	5,273
1875	184,516 48	64,862.37	3,422.67	3,828,594,027	159,098.75	91	1,591	4	1,966
1876	191,335.84	61,474.22	3,357.88	4,020,936,278	106,900.21	92	4,931	I	3,340
1877	189,296.90	57,553.27	3,249	4,267,218,162	17,014.05	93	2,631		2,980
1878	200,183.28	55,230.50	3,524,50	4,589,879,986	48,555.32	94	3,376	1	745
1879	205,415.75	54,497.22	3,979.75	5,291,337,520	11,457.50	97	626	2	2,530
1880	216,214.37	60,983.67	5,800	5,993,009,343	161,883.89	102	873	5	247
1881	210,031.46	76,629.09	7,192.80	6,344,182,224	201,487.10	114	4,149	12	3.276
1882	362,762.07			7,076,212,870					1,655
1883	426,353.57	87.193.53	8,811	8,568,445,200	200,029.90	150	529	18	5,135



THE BUFFALO CITY WATER WORKS.

35

TRIA	L BALANCE, BUFFALO CITY WATER	_,	
1.	Supply Account	27	\$ 40,605.40
2.	Buffalo City Water Works, Con-		• • • • • • • • • • • • • • • • • • • •
	struction\$	584,382.00	
3⋅	Buffalo City Water Works, Exten-	3-4,3	
•	sion Fund		24,319.57
4.	Bonds Payable		2,929,382.00
5.	City Treasurer	245,214.07	V 3.0
6.	Hydrant and Water Fund		222,841.73
7.	Buffalo City Water Works, Exten-		,
•	sion Loan	2,345,000.00	
17.	Supply Account		287,223.43
37⋅	Store House	6,744.70	
48.	Pipe and Specials	520.49	
51.	Fuel	62,097.34	
53.	New Engine Foundation	11,202.91	
54.	New Boiler House	2,106.31	
55.	New Engine Room	757.92	
56 .	New Engine	3,970.41	
57.	Testing New Engine	375. 07	•
58.	Salaries	8,653.57	
59.	Engineers, Lower Engine House.	2,983.29	
60.	Fireman, Lower Engine House	5,272.44	
61.	Labor, Lower Engine House	2,893.39	
62.	Engineers, Upper Engine House.	2,491.55	
63.	Fireman, Upper Engine House	1,559.80	
64.	Labor, Upper Engine House	1,005.00	
65.	Inspectors	4,382.35	
66.	Watchmen	872.00	
67.	Pipe Inspector	348.75	
68.	Teamster	378.45	
6 9.	Tapping	1,299.19	
73.	Office Expenses	413.80	
75.	Stationery	853.61	

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78 .	Advertising	\$ 260.21
7 9.	Repairs, Store House Building	190.98
8 1.	Repairs, Upper Engine House	
	Building	757-44
83.	Repairs, Lower Engine House	
	Building	2,112.69
85.	Supplies, Upper Engine House	226.17
89.	Repairs, Holly Engine No. 1	1.50
91.	Repairs, Holly Engine No. 2	560.15
92.	Repairs, Boiler No. 1, Upper En-	•
	gine House	1,049.91
93.	Repairs, Boiler No. 2, Upper En-	
	gine House	747.09
94.	General Repairs, Machinery, Up-	
	per Engine House	217.54
96.	Repairs, Coal Hoist, Upper En-	
	gine House	123.96
97.	Repairs, Engine No. 1, Lower En-	
	gine House	226.34
99.	Repairs, Engine No. 2, Lower	
	Engine House	88.76
100.	Repairs, Engine No. 3, Lower	
	Engine House	109.87
101.	Repairs, Worthington Boilers Nos.	
	1, 2 and 3, Lower Engine	
	House	567.28
102.	Repairs, Marine Boilers Nos. 1, 2	
	and 3, Lower Engine House	340.01
103.	Repairs, Boilers Nos. 4 and 5,	_
	Lower Engine House	445.84
104.	General Repairs, Machinery,	
	Lower Engine House	328.40
106.	New Tools, Lower Engine House	178.66
108.	Tool Repairs, Lower Engine	• •
	House	59.44

THE BUFFALO CITY WATER WORKS.

202.	Experts' Fees		\$ 500.00
203.	Builders		1,438.98
203. 208.	Gaskill Engine	\$ 170.90	1,430.90
225.	Hydrant Repairs	14,167.19	
•	Street Reservoir		
329.	Meter Screens	363.99	
330.	Horses Purchased	ρ.00	
331	Reservoir	180.00	
331.		935-39	
332.	Bird Island Pier Valve	197.37	
333 ·	Air Pump	330.33	
3 33·	Scajaquada Creek Bridge	1,778.47	
334.	New Horse Troughs	85.84	
335.	Repairs, Dodge Farm	362.00	
3 36.	Old Repair Account	1,060.02	
337.	Pressure Regulator	2,803.70	
33 8.	Repairs, Feed Pumps, Lower En-		
	gine House	103 01	
338.	Service Leaks	429.83	
339.	Inlet Pier	2,419.63	
340.	Freight and Express Charges	33.69	
341.	James N. Scatcherd	488.00	
341.	Louis P. Reichert	624.00	
341.	James Ryan	624.00	
342.	Rent of Bell Telephone Co	299.99	
342.	Traveling Expenses	100.00	
-3 46.	Delaware avenue, betw. Ferry		
1	street and Chapin place	314.60	
34 6.	Goodrich street, betw. Michigan		
	and Main streets	1,307.34	
346.	Elicott street, betw. Goodrich and		
	High streets	335.72	
347.	George street, betw. Mortimer and		
	Jefferson streets	360.28	
34 7 ·	Locust street, betw. High and	-	
	North streets	696.29	

347•	Fox street, betw. Genesee and	
348.	Sycamore streets	\$1,427.16
340.	and West avenue	481.34
348.	West avenue, betw. Albany and	401.34
340.	Arkansas streets	560.76
348.	Hampshire street	342.56
349.	Genesee street, betw. Herman and	343-
347	Best streets	4,680.54
349.	Carlton street, betw. Jefferson	,, ,
J.,	street and 250 feet easterly	291.32
349.	Johnson street, betw. Genesee	, •
0.7	and Sycamore streets	1,351.28
350.	Fifteenth street, betw. Connecticut	
	and Vermont streets	711.81
350.	Vermont street, betw. Thirteenth	
	and Fourteenth streets	422.20
350.	Bryant street, betw. Elmwood and	
	Howard avenues	1,054.13
351.	Howard avenue, betw. Bryant and	
	Summer streets	1,376.91
35 T.	Utica street, betw. Elmwood and	
	Ashland avenues	228.98
351.	Utica street, betw. Linwood ave-	
	nue and Main street	504.10
35 2 .	Utica street, betw. Delaware and	
	Linwood avenues	180.52
35 2 .	Summer street, betw. Howard and Ashland avenues	1 11
		645.66
354	Smith street, betw. Elk and Seneca streets	6,703.18
354.	Oak street, betw. North and Best	0,703.18
337.	streets	639.00
354.	Beech street, betw. Virginia and	- 37.00
JJ 4.	Carlton streets	650.44
		3

\$ 692.48
489.73
710.23
665.96
005.90
323.41
3-3-4-
560.85
3,521.46
421.14
900 90
802.83
851.35
-333
512.19
39
495.74
906.22
1,514.92
401.65
551.07
551.07
940.65

360 .	Ellicott street, betw. Best and	
	Dodge streets	\$ 587.24
361.	Adam street, betw. Brown and	•
	Genesee streets	368.46
361.	Metcalfe street, betw. Howard and	
	William streets	556.75
361.	Michigan street, betw. Utica and	
	Laurel streets	274.28
362 .	Tousey street, betw. Sycamore	
	and Champlain streets	264.75
362 .	Elm street, betw. Best and North	
	streets	528.39
362 .	Shumway street, betw. William	
	and Peckham streets	977.69
363.	Howard street, betw. Monroe and	
	Adam streets	297.31
363 .	Grey street, betw. Broadway and	
_	Sycamore street	1,238.68
363 .	Howard street, betw. Watson and	
	Emslie streets	38.92
364.	Howard street, betw. Smith street	
	and Fillmore parkway	853.88
364.	Rhode Island street, betw. Pros-	
•	pect and West avenues	804.12
364.	Summer street, betw. Delaware	-
•	avenue and Main street	813.15
365 .	Waverly street, betw. Ferry street	
	and R. R. avenue	70 5.78
3 65.	Ashland avenue, betw. Bryant	
	street and 850 feet southerly	785.5 r
365 .	Cayuga street, betw. Jefferson	_ _
	street and 700 feet easterly	648.44
36 6.	Penfield street, betw. West avenue	
	and Niagara street	256.15

366.	Rhode Island street, betw. Thir-	A . C. C.
366 .	teenth street and Richmond av. Krettner street, betw. Lovejoy	\$ 3,602.64
	street and 150 feet northerly	176.61
367.	· Peckham street, betw. Smith street and Fillmore avenue	
367.	Sherman street, betw. Sycamore	1,738.35
307.	and Genesee streets	1,309.80
3 67.	Ralph alley, betw. Burton alley	
-40	and Virginia street	357.65
36 8.	Burton alley, betw. Ralph alley and Michigan street	114.49
368.	Fillmore parkway, betw. Seneca	
	and Peckham streets	15,439.42
368 .	Carroll street, betw. Van Rensse-	
-6-	laer and Hydraulic streets Dodge street, betw. Michigan and	109.45
36 9.	Masten streets	549.96
36 9.	Herman street, betw. Genesee	3.77
	street and Broadway	1,690.48
369.	West avenue, betw. Arkansas and Breckenridge streets	780.37
370.	Ferry street, betw. Ferry street	700.37
•	and West avenue	194.85
370.	Stanton street, betw. Lovejoy	
370.	street and 510 feet northerly Front avenue, at Connecticut	506.99
370.	street	84.78
371.	Bird avenue, betw. West avenue	
287	and Grant street Carlton street, from end of pipe to	1,698.04
371.	Genesee street	1,093.75
371.	Elk street, betw. Smith and Bab-	. ,
	cock streets	5,005.32

372.	Michigan street, betw. N. Hamp-	
	ton and Laurel streets	\$ 901.58
372 .	Fourteenth street, betw. Rhode	
	Island and Massachusetts sts	623.74
372.	Morgan street, betw. Genesee and	
	Court streets	353-45
373.	Farmer street, betw. East and	
	Gurnsey streets	35 6.5 9
373-	Hamilton street, betw. East street	
	to 50 feet east of Thompson	
	street	593-39
373-	Michigan street, betw. Utica and	
	Ferry streets	. 1,400.67
374	Monroe street, betw. William and	
	Clinton streets	1,267.26
374-	Sherman street, betw. William and	
	Howard streets	559.36
374-	Bristol street, betw. Bond and	
	Emslie streets	305.79
375∙	Stanton street, betw. William and	
	Peckham streets	978.75
375∙	Sixteenth street, betw. Connecti-	•
	cut and Vermont streets	624.99
375.	Ferry street, betw. West avenue	
-	to 450 feet easterly	506.90
376.	Selkirk street, betw. Elk and Perry	•
•	streets	738.15
376.	School street, betw. Fargo avenue	
	to 300 feet easterly	423.93
376.	Chenango street, betw. Rhode Is-	
	land and Ferry streets	1,193.03
377.	Massachusetts street, betw. Pros-	
	pect and Fargo avenues	406.71
377.	· Burton alley, betw. Oak street	• •
	and Boston alley	307.45
6	•	3 . 13

377.	Hamilton street, betw. Spring and		
	Jefferson streets	\$ 557.85	
37 8.	Bond street, betw. Howard and		
	Oneida streets	260.60	•
378.	Peach street, betw North and		
••	Best streets	547.20	
378	Fargo avenue, betw. Massachu-		
J.	setts and Hampshire streets	19.67	
379.	Main street, betw. Delaware avenue	, ,	
313.	and R. R. crossing	39,499.84	
379.	William street, betw. Babcock	377777	
319.	street and Williamsville road	5,112.05	•
270	Williamsville road, betw. William	5,112.05	
379.	street and Broadway	9,620.76	
-0-	•	9,020.70	
380 .	Williamsville road, betw.Broadway	. 0	
	and 1,300 feet northerly	2,480.09	
393∙	Folz, Ashman & Co	301.39	
∙393∙	A. Schaeffer	63.00	
394.	Jno. T. Noye & Sons	23.00	
394.	American Grape Sugar Works	70.16	
39 4.	N. Y. W. S. & B. R. R. Co	63.96	
395.	N. Y. W. S. & B. R. R. Co		\$ 15,331.27
398.	M. Scanlon	15.50	
398.	Laub & Zeller	10.19	
399	Adam Hastman	147.44	
			

\$3,858,917.74 \$3,858,917.74

BALANCE SHEET, BUFFALO CITY WATER WORKS, JANUARY 1, 1884.

2.	Βι	ıffalo	City	Water	Works	Con-	
	_						\$584,382.00

3. Buffalo City Water Works Extension Fund....... 237,737.25 4. Bonds Payable.....

\$2,871,882.00

THE	BUFFALO	City	WATER	WORKS

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5.	City Treasurer	170,635.96	
б.	Hydrant and Water Fund		\$466,567.85
7.	Buffalo City Water Works Exten-		
	sion Loan2	,345,000.00	
17.	Supply Account		29,418.59
37.	Store House	,6,744.70	
46.	Pipe and Specials	520.49	
51.	Fuel	22,153.40	
393.	Folz, Ashman & Co	301.39	
393.	Alois Schaeffer	63.00	
394	John T. Noye & Son	23.00	
394	American Grape Sugar Works	70 .16	
394	New York, West Shore & Buffalo		
	R. R. Co	63 .96	
398.	M. Scanlon	15.50	
398 .	Laub & Zeller	10.19	
399.	Adam Hastman	147.44	

\$3,367,868.44 \$3,367,>68.44

EXTENSION FUND.

1883.		
Jan'y 29,	G. C. Grimard, Cash'r Pay roll, January\$	29.00
Feb. 19,	Hardwicke & WareLabor and material	4.22
"	Buffalo Gas Light Co Replacing gas mains	7.72
"	Weed & Co Material	.13
"	Harris & LoskamBoard of Experts	53.00
44	Taylor and CrateLumber	36.72
44	E. G. Felthousen Labor and Material	19.80
44	Wm. H. JaegerRefreshments	20.00
"	Daniel SullivanCartage	1.00
44	Bott and Hughes Paint'g and kalsomining	25.00
"	Young, Lockwood & Co. Stationery	6.90

1883.		
Feb. 19,	Drullard & Hayes No. 4, special castings	\$107.79
"	Drullard & Hayes No 6, special castings	94.25
**	Drullard & HayesNo. 8, special castings	68.63
Mar. 5.	F. S. PeaseMerchandise	109.40
46	F. S. Pease Empty casks	6.80
46	Robert Chilcott Ceiling pump house	215.00
46	Hardwicke & WareLabor and material	5.80
"	Buffalo Scale Co Loan of scales	20.00
**	S. ChamberlainLabor and material	5.30
**	Farrar & TreftsLabor and material	3.55
**	Felthousen & RussellLabor and material	8.05
Mar. 12,	E, & B. HolmesLumber	13.00
"	Nelson HollandLumber	10.64
**	Hurd & HauensteinLumber	10.15
-46	C J. Hamilton Lumber	4.82
April 2,	Felthousen & RussellLabor and material	6.10
"	G. C. Grimard, Cash'r. Pay roll, March	337-23
April 9,	Lee, Smith & MooreCoal	4.50
16	Weed & Co Merchandise	6 70
**	Harris & Losekam Board	20.50
April 30,	G. C. Grimard, Cash'r. Weekly pay roll	165.12
"	G. C. Grimard, Cash'r. Pay roll, April	3,308.27
May 7,	G. C. Grimard, Cash'r. Weekly pay roll	The state of the s
May 14,	Geo. B. HayesWater pipe	192.77
"	Geo. B. HayesSpecial castings	759.87
44	Geo. B. HayesSpecial castings	276.34
**	C. J. HamiltonLumber, etc	1.20
**	G. C. Grimard, Cash'r. Weekly pay roll	245.62
May 21,	A. M. EdwardsLoan of chronometer	5.00
"	Ludlow Valve M'f'g Co. Hub valves	966.25
"	Hardwicke & Ware Labor and material	.50
""	John Lyth Drain tile	30.00
"	Wm. McDonnell Teaming, etc	13.50

J. Bourgnon......Charcoal.....

M. Kalbfleisch's Sons..Pig lead............. 1,327.50

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THE BUFFALO CITY WATER WORKS.

47

2.10

June 17, G. B. Hayes Cast iron pipe \$4,792.63 " G. B. Hayes Cast iron pipe 7,544.47 " G. B. Hayes Special castings 121.33 " G. B. Hayes Hydrants 888.00 " G. C. Grimard, Cash'r. Weekly pay roll 954.89 June 25, Pratt & Co. Sundries 53.45 " James Boland Repaving 37.56 " James Boland Repaving 37.56 " James Boland Repaving 44.48 " James Boland Repaving 31.72 " James Boland Repaving 36.60 " G. B. Hayes Special castings 53.95 " G. B. Hayes Hydrants 555.00 " G. B. Hayes Cast iron pipe 37,38.53 " G. C. Grimard, Cash'r. Weekly pay roll 756.36 " G. C. Grimard, Cash'r. Weekly pay roll 962.77 <th>1883.</th> <th></th> <th></th>	1883.		
"G. B. Hayes Special castings 121.33 "G. B. Hayes Hydrants 888.00 "G. C. Grimard, Cash'r. Weekly pay roll 954.89 June 25, Pratt & Co Sundries 53.45 "James Boland Repaving 56.78 "James Boland Repaving 114.36 "James Boland Repaving 44.48 "James Boland Repaving 31.72 "James Boland Repaving 49.00 "James Boland Repaving 36.60 "G. B. Hayes Special castings 539.57 "G. B. Hayes Special castings 539.57 "G. B. Hayes Pydrants 555.00 "G. B. Hayes Cast iron pipe 3,738.53 "G. C. Grimard, Cash'r. Weekly pay roll 756.36 "G. C. Grimard, Cash'r. Weekly pay roll 962.77 July 2, Taylor & Crate Lumber 5.09 "Ludlow Valve M'f'g Co. Valves 1,537.50 July 9, B. Cunningham Excavating 1,200.00 "G. C. Grimard, Cash'r. Weekly pay roll	June 17,	G. B. Hayes Cast iron pipe	\$4,792.63
" G. B. Hayes Hydrants 888.00 " G. C. Grimard, Cash'r. Weekly pay roll 954.89 June 25, Pratt & Co. Sundries 53.45 " James Boland Repaving 56.78 " James Boland Repaving 37.56 " James Boland Repaving 114.36 " James Boland Repaving 44.48 " James Boland Repaving 36.60 " James Boland Repaving 36.60 " G. B. Hayes Special castings 539.57 " G. B. Hayes Lydrants 555.00 " G. B. Hayes Cast iron pipe 3,738.53 " G. C. Grimard, Cash'r. Weekly pay roll 756.36 " G. C. Grimard, Cash'r. Weekly pay roll 962.77 July 2, Taylor & Crate Lumber 5.09 " Ludlow Valve M'f'g Co. Valves 1,537.50 July 9, B. Cunningham Excavating 1,200.00 " G. C. Grimard, Cash'r. Weekly pay roll 882.40 " W. R. & W. Havens Excavating 1,356.00 July 16, Bingham & Morga	"	G. B. Hayes Cast iron pipe	7,544.47
"G. C. Grimard, Cash'r. Weekly pay roll 954.89 June 25, Pratt & Co. Sundries. 53.45 "James Boland. Repaving 56.78 "James Boland. Repaving 37.56 "James Boland. Repaving 114.36 "James Boland. Repaving 44.48 "James Boland. Repaving 36.60 "James Boland. Repaving 36.60 "James Boland. Repaving 36.60 "James Boland. Repaving 36.60 "G. B. Hayes Special castings 539.57 "G. B. Hayes Cast iron pipe 3,738.53 "G. C. Grimard, Cash'r. Weekly pay roll. 756.36 "G. C. Grimard, Cash'r. Weekly pay roll. 962.77 July 2, Taylor & Crate Lumber 5.09 "Ludlow Valve M'f'g Co. Valves 1,537.50 July 9, B. Cunningham Excavating 1,200.00 "G. C. Grimard, Cash'r. Weekly pay roll 882.40 "W. R. & W. Havens Excavating 1,356.00 July 16, Bingham & Morgan Sundries 215.10	**	G. B. HayesSpecial castings	121.33
June 25, Pratt & Co. Sundries. 53.45 " James Boland. Repaving. 56.78 " James Boland. Repaving. 114.36 " James Boland. Repaving. 44.48 " James Boland. Repaving. 31.72 " James Boland. Repaving. 36.60 " G. B. Hayes. Special castings. 539.57 " G. B. Hayes. Cast iron pipe. 3,738.53 " G. C. Grimard, Cash'r. Weekly pay roll. 756.36 " G. C. Grimard, Cash'r. Weekly pay roll. 962.77 July 2, Taylor & Crate. Lumber. 5.09 " Ludlow Valve M'f'g Co. Valves. 1,537.50 July 9, B. Cunningham. Excavating. 1,200.00 " G. C. Grimard, Cash'r. Weekly pay roll.	100	G. B. Hayes	888.00
" James Boland. Repaving. 36.78 " James Boland. Repaving. 37.56 " James Boland. Repaving. 114.36 " James Boland. Repaving. 44.48 " James Boland. Repaving. 49.00 " James Boland. Repaving. 36.60 " James Boland. Repaving. 36.60 " G. B. Hayes. Special castings. 539.57 " G. B. Hayes. Cast iron pipe. 3,738.53 " G. C. Grimard, Cash'r. Weekly pay roll. 756.36 " G. C. Grimard, Cash'r. Weekly pay roll. 962.77 July 2, Taylor & Crate. Lumber. 5.09 " Ludlow Valve M'f'g Co. Valves. 1,537.50 July 9, B. Cunningham. Excavating. 1,200.00 " G. C. Grimard, Cash'r. Weekly pay roll. 882.40 " W. R. & W. Havens. Excavating. 1,356.00 July 16, Bingham & Morgan. Sundries. 215.10 " J. Lyth & Son. Tile, etc. 30.00 " W.H. H. Newman & Co. Pig lead. 924.80 " James Boland. Repaving. 489.62 <	***	G. C. Grimard, Cash'r. Weekly pay roll	954.89
" James Boland. Repaving. 114.36 " James Boland. Repaving. 114.36 " James Boland. Repaving. 44.48 " James Boland. Repaving. 31.72 " James Boland. Repaving. 36.60 " James Boland. Repaving. 36.60 " G. B. Hayes. Special castings 539.57 " G. B. Hayes. Pydrants. 555.00 " G. B. Hayes. Cast iron pipe. 3,738.53 " G. C. Grimard, Cash'r. Weekly pay roll. 756.36 " G. C. Grimard, Cash'r. Weekly pay roll. 962.77 July 2, Taylor & Crate. Lumber. 5.09 " Ludlow Valve M'f'g Co. Valves. 1,537.50 July 9, B. Cunningham Excavating 1,200.00 " G. C. Grimard, Cash'r. Weekly pay roll. 882.40 " W. R. & W. Havens Excavating 1,356.00 July 16, Bingham & Morgan Sundries. 215.10 " J. Lyth & Son Tile, etc. 30.00 " W.H. H. Newman & Co. Pig lead 924.80 " James Boland Repaving 489.62 " N Y.C. & H. R. Ry Co. Freight charges	June 25,	Pratt & CoSundries	53-45
" James Boland. Repaving. 114.36 " James Boland. Repaving. 31.72 " James Boland. Repaving. 49.00 " James Boland. Repaving. 36.60 " James Boland. Repaving. 36.60 " G. B. Hayes. Special castings. 539.57 " G. B. Hayes. Hydrants. 555.00 " G. B. Hayes. Cast iron pipe. 3,738.53 " G. C. Grimard, Cash'r. Weekly pay roll. 756.36 " G. C. Grimard, Cash'r. Weekly pay roll. 962.77 July 2, Taylor & Crate. Lumber. 5.09 " Ludlow Valve M'f'g Co. Valves. 1,537.50 July 9, B. Cunningham. Excavating. 1,200.00 " G. C. Grimard, Cash'r. Weekly pay roll. 882.40 " W. R. & W. Havens. Excavating. 1,356.00 July 16, Bingham & Morgan. Sundries. 215.10 " J. Lyth & Son. Tile, etc. 30.00 " W.H. H.Newman & Co. Pig lead. 924.80 " James Boland. Repaving. 489.62 " N Y.C. & H. R. Ry Co. Freight charges. 18 44 <t< td=""><td>"</td><td></td><td>56.78</td></t<>	"		56.78
" James Boland. Repaving. 31.72 " James Boland. Repaving. 30.00 " James Boland. Repaving. 36.60 " James Boland. Repaving. 36.60 " G. B. Hayes. Special castings. 539.57 " G. B. Hayes. Hydrants. 555.00 " G. B. Hayes. Cast iron pipe. 3,738.53 " G. C. Grimard, Cash'r. Weekly pay roll. 756.36 " G. C. Grimard, Cash'r. Pay roll, June. 4,270.93 " G. C. Grimard, Cash'r. Weekly pay roll. 962.77 July 2, Taylor & Crate. Lumber. 5.09 " Ludlow Valve M'f'g Co. Valves. 1,537.50 July 9, B. Cunningham. Excavating. 1,200.00 " G. C. Grimard, Cash'r. Weekly pay roll. 882.40 " W. R. & W. Havens. Excavating. 1,356.00 July 16, Bingham & Morgan. Sundries. 215.10 " J. Lyth & Son. Tile, etc. 30.00 " W.H. H. Newman & Co. Pig lead. 924.80 " James Boland. Repaving. 489.62 " N Y.C. & H. R. Ry Co. Freight charges. 18 44	***	James BolandRepaving	37.56
" James Boland. Repaving. 31.72 " James Boland. Repaving. 36.60 " James Boland. Repaving. 36.60 " G. B. Hayes. Special castings. 539.57 " G. B. Hayes. Hydrants. 555.00 " G. B. Hayes. Cast iron pipe. 3,738.53 " G. C. Grimard, Cash'r. Weekly pay roll. 756.36 " G. C. Grimard, Cash'r. Pay roll, June. 4,270.93 " G. C. Grimard, Cash'r. Weekly pay roll. 962.77 July 2, Taylor & Crate. Lumber. 5.09 " Ludlow Valve M'f'g Co. Valves. 1,537.50 July 9, B. Cunningham. Excavating 1,200.00 " G. C. Grimard, Cash'r. Weekly pay roll. 882.40 " W. R. & W. Havens. Excavating 1,356.00 July 16, Bingham & Morgan. Sundries. 215.10 " J. Lyth & Son. Tile, etc. 30.00 " W.H. H. Newman & Co. Pig lead. 924.80 " James Boland. Repaving. 489.62 " N Y.C. & H. R. Ry Co. Freight charges. 18.44 " Geo. B. Hayes. Special castings. 405.57 " Geo. B. Hayes.	**	THE RESIDENCE OF THE PARTY OF T	114.36
" James Boland. Repaving. 36.60 " James Boland. Repaving. 36.60 " G. B. Hayes. Special castings. 539 57 " G. B. Hayes. Hydrants. 555.00 " G. B. Hayes. Cast iron pipe. 3,738.53 " G. C. Grimard, Cash'r. Weekly pay roll. 756.36 " G. C. Grimard, Cash'r. Pay roll, June. 4,270.93 " G. C. Grimard, Cash'r. Weekly pay roll. 962.77 July 2, Taylor & Crate. Lumber. 5.09 " Ludlow Valve M'f'g Co. Valves. 1,537.50 July 9, B. Cunningham. Excavating. 1,200.00 " G. C. Grimard, Cash'r. Weekly pay roll. 882.40 " W. R. & W. Havens. Excavating. 1,356.00 July 16, Bingham & Morgan. Sundries. 215.10 " J. Lyth & Son. Tile, etc. 30.00 " W.H. H. Newman & Co. Pig lead. 924.80 " James Boland. Repaving. 489.62 " N Y.C. & H. R. Ry Co. Freight charges. 18 44 " Geo. B. Hayes. Special castings. 405.57 " Geo. B. Hayes. Cast iron pipe. 5,024.45	44	James BolandRepaving	44.48
" James Boland Repaving 36.60 " G. B. Hayes Special castings 539 57 " G. B. Hayes Hydrants 555.00 " G. B. Hayes Cast iron pipe 3,738.53 " G. C. Grimard, Cash'r. Weekly pay roll 756.36 " G. C. Grimard, Cash'r. Pay roll, June 4,270.93 " G. C. Grimard, Cash'r. Weekly pay roll 962.77 July 2, Taylor & Crate Lumber 5.09 " Ludlow Valve M'f'g Co. Valves 1,537.50 July 9, B. Cunningham Excavating 1,200.00 " G. C. Grimard, Cash'r. Weekly pay roll 882.40 " W. R. & W. Havens Excavating 1,356.00 July 16, Bingham & Morgan Sundries 215.10 " J. Lyth & Son Tile, etc 30.00 " W.H. H. Newman & Co. Pig lead 924.80 " James Boland Repaving 489.62 " N Y.C. & H.R. Ry Co. Freight charges 18 44 " Geo. B. Hayes Special castings 405.57 " Geo. B. Hayes Hydrants 518.00 " Geo. B. Hayes Cast iron pipe 5,024.45	"	James BolandRepaving	31.72
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" G. B. Hayes	"		36.60
" G. B. Hayes	"	G. B. HayesSpecial castings	539 57
" G. C. Grimard, Cash'r. Weekly pay roll. 756.36 " G. C. Grimard, Cash'r. Pay roll, June. 4,270.93 " G. C. Grimard, Cash'r. Weekly pay roll. 962.77 July 2, Taylor & Crate. Lumber. 5.09 " Ludlow Valve M'f'g Co. Valves. 1,537.50 July 9, B. Cunningham. Excavating. 1,200.00 " G. C. Grimard, Cash'r. Weekly pay roll. 882.40 " W. R. & W. Havens. Excavating. 1,356.00 July 16, Bingham & Morgan. Sundries. 215.10 " J. Lyth & Son. Tile, etc. 30.00 " W.H. H. Newman & Co. Pig lead. 924.80 " James Boland. Repaving. 489.62 " N Y.C. & H. R. Ry Co. Freight charges. 18.44 " Geo. B. Hayes. Special castings. 405.57 " Geo. B. Hayes. Hydrants. 518.00 " Geo. B. Hayes. Cast iron pipe. 5,024.45	**		555.00
" G. C. Grimard, Cash'r. Pay roll, June	**		3,738.53
" G. C. Grimard, Cash'r. Weekly pay roll. 962.77 July 2, Taylor & Crate. Lumber. 5.09 " Ludlow Valve M'f'g Co. Valves. 1,537.50 July 9, B. Cunningham. Excavating. 1,200.00 " G. C. Grimard, Cash'r. Weekly pay roll. 882.40 " W. R. & W. Havens. Excavating. 1,356.00 July 16, Bingham & Morgan. Sundries. 215.10 " J. Lyth & Son. Tile, etc. 30.00 " W.H. H. Newman & Co. Pig lead. 924.80 " James Boland. Repaving. 489.62 " N Y.C. & H. R. Ry Co. Freight charges. 18.44 " Geo. B. Hayes. Special castings. 405.57 " Geo. B. Hayes. Hydrants. 518.00 " Geo. B. Hayes. Cast iron pipe. 5,024.45	46	G. C. Grimard, Cash'r. Weekly pay roll	756.36
July 2, Taylor & CrateLumber	"	G. C. Grimard, Cash'r. Pay roll, June	4,270.93
" Ludlow Valve M'f'g Co. Valves	46	G. C. Grimard, Cash'r. Weekly pay roll	962.77
July 9, B. Cunningham Excavating 1,200.00 "G. C. Grimard, Cash'r. Weekly pay roll. 882.40 "W. R. & W. Havens Excavating 1,356.00 July 16, Bingham & Morgan Sundries. 215.10 "J. Lyth & Son Tile, etc. 30.00 "W.H. H. Newman & Co. Pig lead	July 2,	Taylor & CrateLumber	5.09
" G. C. Grimard, Cash'r. Weekly pay roll. 882.40 " W. R. & W. Havens Excavating 1,356.00 July 16, Bingham & Morgan Sundries. 215.10 " J. Lyth & Son Tile, etc. 30.00 " W.H. H. Newman & Co. Pig lead. 924.80 " James Boland Repaving. 489.62 " N Y.C. & H. R. Ry Co. Freight charges. 18.44 " Geo. B. Hayes Special castings. 405.57 " Geo. B. Hayes Hydrants. 518.00 " Geo. B. Hayes Cast iron pipe. 5,024.45	**	Ludlow Valve M'f'g Co. Valves	1,537.50
"W. R. & W. Havens Excavating 1,356.00 July 16, Bingham & Morgan Sundries 215.10 "J. Lyth & Son Tile, etc 30 00 "W.H. H. Newman & Co. Pig lead 924.80 "James Boland Repaving 489.62 "NY.C. & H. R. Ry Co. Freight charges 18 44 "Geo. B. Hayes Special castings 405.57 "Geo. B. Hayes Hydrants 518 00 "Geo. B. Hayes Cast iron pipe 5,024.45	July 9,	B. Cunningham Excavating	1,200.00
July 16, Bingham & Morgan Sundries 215.10 "J. Lyth & Son Tile, etc 30 00 "W.H. H. Newman & Co. Pig lead 924.80 "James Boland Repaving 489.62 "NY.C. & H. R. Ry Co. Freight charges 18 44 "Geo. B. Hayes Special castings 405.57 "Geo. B. Hayes Hydrants 518 00 "Geo. B. Hayes Cast iron pipe 5,024.45	"	G. C. Grimard, Cash'r. Weekly pay roll	882.40
July 16, Bingham & Morgan Sundries 215.10 "J. Lyth & Son Tile, etc 30 00 "W.H. H. Newman & Co. Pig lead 924.80 "James Boland Repaving 489.62 "NY.C. & H. R. Ry Co. Freight charges 18 44 "Geo. B. Hayes Special castings 405.57 "Geo. B. Hayes Hydrants 518 00 "Geo. B. Hayes Cast iron pipe 5,024.45	"	W. R. & W. Havens Excavating	1,356.00
" J. Lyth & Son Tile, etc	Tuly 16.	Bingham & MorganSundries	215.10
"W,H.H.Newman & Co.Pig lead			
" James Boland	"		
" N Y.C. & H. R. Ry Co. Freight charges	**		
" Geo. B. HayesSpecial castings	- 11		
" Geo. B. Hayes Hydrants 518 00 " Geo. B. Hayes Cast iron pipe 5,024.45	16		
" Geo. B. Hayes Cast iron pipe 5,024.45	u	Geo. B. HayesHydrants	518 00
" Geo. B. Hayes Cast iron pipe 1,165.04	и		N. Salara
	***	Geo. B. HayesCast iron pipe	1,165.04

1883.	•	
July 16,	Geo. B. HayesCast iron pipe	1,708.50
"	Geo. B. HayesCast iron pipe	1,089.46
**	Geo. B. HayesSpecial castings	202.46
"	Geo. B. HayesCast iron pipe	1,496.68
44	Geo. B. HayesCast iron pipe	948.03
"	Geo. B. HayesSpecial castings	117.65
44	Eddy Valve M'f'g Co Valves	3,688.85
44	G. C. Grimard, Cash'r. Weekly pay roll	1,155.06
July 23,	G. C. Grimard, Cash'r. Weekly pay roll	1,002.62
"	W. R. & W. Havens Excavating trenches	577.25
66	B. CunninghamExcavating trenches	250.00
July 30,	Felthousen & Russell Merchandise	7.50
4	Farrar & TreftsLabor and material	9.42
44	Taylor & CrateLumber	6 .85
"	Geo. B. HayesCast iron pipe	2,569.80
44	Geo. B. HayesCast iron pipe	935-39
46	Geo. B. HayesLabor and material	263.35
"	Geo. B. HayesCast iron pipe	2,860.75
44	Geo. B. HayesCast iron pipe	864.94
"	Geo. B. HayesSpecial castings	269.02
4.	G. C. Grimard, Cash'r. Pay roll, June	3,625.79
"	G. C. Grimard, Cash'r. Weekly pay roll	821.62
66	G. C. Grimard, Cash'r. For weekly pay roll dur-	
	ing adjournment of	
	Council, as per resolu-	
	tion	4,000.00
Aug. 27.	Ludlow Valve M'f'g Co.Fire Hydrants	1,537.50
"	Buffalo Gas Light CoCoke	18.00
"	Williamsville Lime Co.1 barrel lime	7.50
"	Charles SuorPine plugs	19.00
66	Vosburgh & BakerSundries	40.30
44	Joseph BourgnonCharcoal	1.50
66	The Eddy Valve Co valve	8.25

1883.	•	
Aug. 27,	J. L. Mott Iron Works,	
	New York City Drinking fountain	67.20
"	The Eddy Valve CoValves	2,311.15
ř	W. R. & W. Havens Excavating	481.75
66	W.H.H. Newman & Co.Lead	921.98
"	Geo. B. HayesSpecial castings	84.26
"	Geo. B. HayesPipe	1,113.10
"	Geo. B. HayesPipe	3,436.03
44	Geo. B. HayesPipe	908.52
	Geo. B. HayesPipe	4,012.30
46	Geo. B. HayesCastings	45.18
44	Geo. B. HayesPipe	1,231.12
44	Geo. B. HayesPipe	3,607.10
44	Geo. B. HayesCastings	137.11
46	Geo. B. HayesPipe	3,455.78
"	Geo. B. HayesPipe	661.74
"	Geo. B. HayesSpecial castings	121.60
"	G. C. Grimard, Cash'r. Weekly pay roll	358.04
"	B. Cunningham Excavating	1,000.00
Sept. 3,	Connolly Bros. & CoGasket	102.40
"	Young, Lockwood & Co. Stationery	47.98
"	G. B. HayesCast iron pipe	3,410.56,
"	G. B. HayesPipe and cartage	67.41
"	G. C. Grimard, Cash'r. Weekly pay roll	1,180.79
"	B. Cunningham Excavating	500.00
Sept. 10,	Jno. C. PostBrushes and lead	4.90
46	Buffalo Gas Light CoCoke	18.00
66	Bingham & MorganValve boxes	306.91
"	Weed & CoSundries	8.96
" .	C. J. HamiltonLumber	10 59
6.	Geo. B. HayesCast iron pipe	3,362.06
46	G. C. Grimard, Cash'r. Weekly pay roll	1,218.87
Sept. 17,	The Eddy Valve CoValves	167.20

1883.		
Sept. 17,	D. W. HodgeRoofing	36.08
"	J. Laycock & SonLumber	25.62
Sept. 10,	Hurd & HauensteinLumber	44-34
44	James BolandBuilding valve house	1,249.85
"	J. McCarthyRemoving obstructions	
	from tunnel and inlet	
	pier	800.00
Sept. 24,	G. C. Grimard, Cash'r. Weekly pay roll	1,153.68
"	E. & B. HolmesLumber	145.00
44	G. B. StarbirdCresting	36.80
Oct. 1,	James BolandLabor	8.75
44	Farrar & TreftsLabor and material	15.25
44	James BolandLabor	40.10
46	Niagara Bridge Works. Building bridge	53 0 .00
44	Sutton & WoodSundries	435-54
46	Geo. B. HayesSpecial castings	147.78
"	Geo. B. HayesSpecial castings and	
	labor	156.87
44	Geo. B. HayesCast iron pipe	1,473.28
"	Geo. B. HayesSpecial castings	64.5 3
4.6	Geo. B. HayesCast iron pipe	1,643.43
"	B CunninghamExcavating	2,000.00
"	G. C. Grimard, Cash'r. Weekly roll, Oct. 6th	784.12
Oct. 8,	G. C. Grimard, Cash'r. Monthly pay roll, Oct	4,180.42
"	G. C. Grimard, Cash'r. Weekly pay roll,	
	Sept. 29th	894.2 <u>0</u>
	Weed & CoSundries	I 2.00
"	Lee, Smith & MooreCoal	4.50
. 44	John C. PostSundries	5.25
"	Bingham & MorganValve boxes	292.83
44	Geo. B. HayesCast iron pipe	2,552.40
46	Geo. B. HayesCast iron pipe	2,584.1 0
44	Geo. B. HayesSpecial castings	113.54
7		

188	33.		
Oct.	14,	Maytham Line of Tugs. Use of tugs in removing	
		obstructions from inlet	
		pier and Bird Island	
		pier valve	582.00
•	•	G. C. Grimard, Cash'r. Weekly pay roll	729.83
Oct.	22,	4.44	254.50
•	•	S. B. CowingCoal tar	2.00
4	•	The Courier CoCopy Daily Courier	.71
4	•	E. G. FelthousenSundries	6.00
4	•	Powell & PlimptonSundries	1.60
6	•	Buffalo Gas Light Co Coke and cartage	22 50
6	•	Jos. BourgnonCharcoal	3.00
•	•	F. Williams & Co ton coal	4.50
•	•	Geo. B. HayesCast iron pipe	1,253.44
•	•	Geo. B. HayesSpecial castings	187.38
4	•	Geo. B. HayesCast iron pipe	1,757.24
6	•	B. CunninghamExcavating	2,000.00
4	•	G. C. Grimard, Cash'r. Weekly pay roll	758.12
Oct.	29,	G. C. Grimard, Cash'r. Weekly pay roll	625.74
6	6	G. C. Grimard, Cash'r. Wages, October	3.783.17
Nov.	I 2,	C. E. HarriesWood plugs	5.00
6	6	Felthousen & RussellSundries	8.04
4	•	F. S. PeaseOil	6.63
4	6	Williamsville Lime Co.Cement	5.00
4	6	Norman E. MackAdvertising	12.00
•	•	Bingham & Morgan Valve boxes	526.92
4	4	C. J. HamiltonLumber	52.50
•	6	E. J. Felthousen Sundries	18.03
•	4	Pratt & CoSundries	64 96
•	6	B. CunninghamExcavating	1,500.00
•	•	Geo. B. HayesCast iron pipe	1,777.88
•	: 6	Geo. B. HayesLabor and material	97.36
	6	Geo R Haves Cast iron nine	2 66+ 26

G. C. Grimard, Cash'r. Weekly pay roll, Decem-

ber ist.....

251.99

THE BUFFALO CITY WATER WORKS.

1883.

Dec.	17, G. C. Grimard, Cash'r. Weekly pay roll, Decem-	
	ber 15th	3 137. 7 6
Dec.	24, G. B. HayesNo. 91, cast iron pipe	• 0
Dec. '		150.51
"	G. B. Hayes	234.94
"	G. B. HayesNo.99, labor and material	29.03
"	Walworth M'f'g CoLabor and material	41.92
	W. C. McDonaldGravel, etc	46 .90
"	Lee, Smith & Moore I ton Bloss. coal	4.50
"	Bingham & MorganValve boxes	167.09
"	Buffalo Gas Light Co 100 bushel coke and	
	cartage	9.00
"	J. T. AveryTurning 6-inch shaft	1.00
66	E.•G. FelthousenSundries	6.50
"	G. C. Grimard, Cash'r. Pay roll, Dec., 1883	4,385.36
"	W. R. & W. Havens Excavating William st.,	
	etc	803.76
".	B. Cunningham Excavating, Main st	
Dec. 3	1, Machworth Bros Labor and material	9.18
"	Bingham & Morgan Valve boxes	316.94
46	Geo. B. HayesSpecial castings	47.57
46	Geo. B. Hayes	5.80
"	Frank Williams & Co ton coal	4.25
"	G. C. Grimard, Cash'r. Weekly pay roll	29.77
"	James BolandRepaving over trenches	729.14
"	Geo. B. HayesSpecial castings	18.59
"	B. CunninghamExcavating	
44	G. C. Grimard, Cash'r. Weekly pay roll	15.00
"	N. Y. C. & H. R. R. Co. Freight charges	3.02
46	N.Y.L.E. & W.R.R.Co. Freight charges	12.23
	THE THE WAS A STATE OF THE SHE CHAIRES	12.23

HYDRANT AND WATER FUND.

188	3.		
Jan.	-	G. C. Grimard, Cash'r. Pay roll, January	3,381.16
Feb.	-	G. C. Grimard, Cash'r. Wages, laborers, thaw-	,0.0
	•	ing hydrants	80.33
Feb.	I 2,	L. H. Knapp, SuptP. O. stamps and inci-	
		dental expenses	50.00
Feb.	19,	Hardwicke & WareLabor and material	16.94
"		Buffalo Gas Light Co Labor and material	14.40
46	i	D. J. BrownCompounds	38.50
66		The Courier CoCopy Daily Courier	\$.5 0
66		Weed & Co Material	11.94
"		G. W. Shaw	45.81
"		Frank Williams & CoCoal	22.50
"		Hamilton Cherry Hay	19.43
**		Goodyear Rubber Co Hose packing, etc	26.22
66		The Courier CoStationery	133.03
"		J. L. Ring & CoOats and feed	33 75
"	•	The Telegraph Pub-	
		lishing CoAdv. Dodge farm	1.50
. "		E. G. FelthousenLabor and material	5 3. 7 5
"		S. ChamberlainLabor and material	17.65
"		C. L. PondMeter seals, etc	19.25
44		H. McDonald	10.65
"		Young, Lockwood & Co. Stationery	8.85
44		Drullard & HayesNo. 7, repairing hydrant	2.00
"		G. C. Grimard, Cash'r. Weekly pay roll, thaw-	•
		ing hydrants	9 9·75
44		G. C. Grimard, Cash'r. Pay roll, February	
		A. GeekieSea grass	27.80
Mar.	5,		9.07
44		Henry Nauert	104.72
"		Bigelow BrosPrinting	10.00
• (1	Pratt & CoMerchandise	64.74

1883.		
Mar. 5	, Taylor & CrateLumber\$	2.04
"	Val. Neureiter	40.64
"	Hardwicke & WareLabor and material	39.93
44	National Meter CoRepairs, meters	15.15
"	S. ChamberlainLabor and material	4.91
44	J. W. AtwoodLabor, repair barn	30.20
"	Ulbrich & Kingsley Drawing paper	9.50
"	M. Riter Labor, repair boiler	121.47
"	Farrar & TreftsLabor and material	197.70
"	Lenhard MillerWagon repairs	34.50
"	Felthousen & RussellLabor and material	27.05
"	G. C. Grimard, Cash'r. Wages, laborers, thaw-	
	ing hydrants	77.82
Mar. 1:	2, Goodyear Rubber Co Packing, etc	18.13
"	The Courier Co Printing, etc	35.50
"	M. Riter Repairs, boiler	6.63
**	Weed & Co Axes	2.00
""	R. E. Andrews thermometers	2.00
"	H. McDonaldHorse shoeing	8.00
"	John C. PostOils	4.00
"	Buffalo VolksfreundAdvertising	9.00
44	Geo. E. NewmanBowl and pitcher	-75
44	Frank Williams & CoCoal	22.50
"	Nelson HollandLumber	28.22
"	William A. Filsinger &	
	BroOats	6 0.46
"	Buffalo Gas Light CoCoke	2.25
44	Hurd & HauensteinLumber	3.74
"	C. J. HamiltonLumber	4.63
66	M. Riter Boiler repairs	243.61
"	M. Riter Boiler repairs	660.33
((E. G. Felthousen Material	51.70
44	G. C. Grimard, Cash'r. Weekly roll, thawing	
	hydrants	94.06

188	3.		
Mar.	12,	G. C. Grimard, Cash'r. Weekly roll, thawing	
		hydrants	94.06
Mar.	26,	G. C. Grimard, Cash'r. Weekly roll, thawing	-
		hydrants	123.94
April	2,	Henry NauertStationery	48.00
44	1	Frederick HeldAdvertising	.75
66	•	Buffalo Evening News. Advertising	7.00
44		Buffalo Evening News. Advertising	2.00
"		Buffalo Evening News. Advertising	9.75
"	•	Evening Telegraph Co. Advertising	7.00
66	•	Hardwicke & WareBushings	.76
44	:	Sam'l McCutcheon Boiler compound	18.co
"		Hamilton CherryHay	19.08
44		S. ChamberlainLabor and material	4.00
44	•	F. S. PeaseOil	89.98
40		J. L. Ring & Co Feed	9.25
"	1	Pratt & LetchworthWrenches	5.25
44	ı	Given & DaytonSlabs and hard wood	65.00
•		Jabesh HarrisSoft soap	1 2.50
44	,	Jabesh Harris	20.00
60	•	The Telephone CoRent	152.49
66	ı	Felthousen & RussellLabor and material	18.00
44	5	G. C. Grimard, Cash'r. Pay roll, March	3,628.95
44	1	G. C. Grimard, Cash'r. Weekly roll, thawing	
		hydrants	104.19
April	9,	Henry Becker & Co Harness repairs	13.98
- 40		Irlbacker & DavisLabor and material	50.30
"	ı	Hugh McDonald Horse shoeing	11.60
44	5	Schlund & DollWash stand	1.50
60	5	Hoddick & CoFrames	4.00
"	1	S. ChamberlainRepairs, wagons	7.25
"	1	Frank Williams & CoCoal	11.25
"		Weed & Co Merchandise	1 62

1883.		
April 9,	John C. PostGlass and oil\$	5.1
. "	Lenhard MillerRepairing wagon	5.50
46	E. G. FelthousenLabor and material	63.98
"	G. C. Grimard, Cash'r. Weekly roll, thawing	
	hydrants	176.98
"	G. C. Grimard, Cash'r. Weekly roll, thawing	
	hydrants	124.00
	L. H. Knapp, SuptP. O. stamps, etc	50.00
"	G. C. Grimard, Cash'r. Weekly pay roll	151.20
46	Star Oil CoOil	2.50
• 6	Bean, Felthousen & Co. Water glass	.30
May 14,	•	12.75
"	N. HollandLumber	32.77
66	J. L. Ring & CoFeed	9.50
46	A. H. Brown Labor and material	20.48
"	H. R. WorthingtonMeter counters	30.50
"	Ulbrich & KingsleyDrawing paper	19.00
"	The Evening Telegraph. Advertising	5.00
"	Given & DaytonHard wood	12.50
"	Goodyear Rubber CoChic hose	6.26
"	John DietzerConstructing sidewalk.	271.56
"	Farrar & TreftsLabor and material	49.02
"	J. N. MatthewsAdvertising	12.00
"	C. J. HamiltonLumber, etc	6.75
May 21,	H. McDonald	8.80
"	H. CherryHay	23.17
"	Goodyear Rubber Co Sundries	28.65
"	John C. PostLead and oil	8.18
"	Geo. W. ShawWhite waste	9.75
46	Union Water Meter Co. Meter registers	82.50
"	The Courier Co Advertising	4.30
"	Reinecke & Zesh Advertising	16.75
"	Wm. A. Filsinger &	.,
	BroFeed	61.50

1883.		
May 21,	Hardwicke & WareLabor and material\$	12.96
66	M. RiterLabor and material	9.00
46	F. S PeaseLead, oil, etc	88.82
66	Ulbrich & KingsleyDrawing paper	9.50
66	Felthousen & RussellSundries	4.28
66	The Courier CoCash registers	7.50
"	E. G. FelthousenLabor and material	2.57
44	Mary Bosche new wagon	135.00
"	Weed & CoSundries	2.60
44	Young, Lockwood & Co Stationery	42.68
66	M. Riter Labor and material	77.64
44	Pratt & CoSundries	21.19
66	Fries & CoCorporation cocks	342.50
June 10,	Star Oil CoOil	23.18
46	John C. PostVen. red and brushes	2.51
"	James D. WarrenAdvertising	29.75
44	Wm. McDonaldTeaming	3.00
66	Powell & PlimptonMerchandise	3.65
"	Hugh McDonald Horse shoeing	13.70
66	Buffalo Evening News. Advertising	8.00
66	C. J. HamiltonLumber	1.50
44	Hardwicke & WareLabor and material	2.89
44	Goodyear Rubber Co Packing, etc	39.97
66	C. W. MillerCoach hire	6.50
"	Knowles Steam Pump	
	Works	325.00
46	Holly Manf'g Co Brass, etc	20.25
44	D. McNaughtonLabor and material	17.75
"	Wheeler & DavisChain	2. I 2
"	F. S. PeaseOil	4.20
"	Henry NauertPrinting	130.90
"	J. L. Ring & CoFeed	9.50
"	Ulbrich & KingsleyDrawing paper	9.50

1883.		
June 10,	Nelson HollandLumber	14.21
66	Bickford & CurtissLeather	11.50
"	Farrar & TreftsLabor and material	11.80
. "	S. D. ColieLumber	22.58
"	C. J. HeinoldSundries	14.85
"	W. A. Case & SonSundries	6.41
"	G. C. Grimard, Cash'r. Express charges and P.	
	O. stamps	24.07
June 17,	The Telegraph Pub. Co. Advertising	7.00
"	E. G. FelthousenLabor and material	2.25
	Hall & SonsKaolin	2. 25
"	A. H. BrownLabor and material	38.36
June 25,	Buffalo Evening News. Advertising	9.75
-	N. E. MackPrinting	34.00
"	Buffalo Evening News. Advertising	6.00
	Vosburgh & BakerMerchandise	85.42
"	Pratt & CoSundries	8.95
44	G. C. Grimard, Cash'r.P. O. stamps	25.00
	The Courier Co Printing	63.00
	Atlas Milling CoFeed	24.25
"	Felthousen & Russell Oil cans, etc	3.71
"	Fries & Co Corporation cocks	398.79
"	Buffalo Gas Light Co Labor and material	35.15
July 9,	E. G. Marvin, agentPaper	7.20
	Hardwicke & WareMerchandise	3.70
"	F. WilliamsCoal	4.50
July 16,	M. E. BeebeDrawing	30.00
"	Frank Williams & Co ton coal	4.25
"	Hugh McDonald Horse shoeing	10.00
"	W. A. Filsinger & Bro. Feed	54.00
"	L. A. Daniels bay horse	180.00
44	G. W. ShawPacking	17.26
"	J. BourgnonCharcoal	1.50

John C. Post Paint.....

Fries & Co...... Corporation cocks.....

owering pipe, making connections, etc. .

John Chamberlain....Lowering

8.50

18 60

45.00

44

"

"

FIFTEENTH ANNUAL REPORT OF

1883.		
Aug. 27,	Wm. McDonald\$	40.00
"	Williamsville Lime Co.1 barrel lime	1.00
"	Hardwicke & WareLabor and material	2.82
44	Ludlow Valve M'f'g Co.Sundries	139 29
"	Vosburgh & BakerSundries	9.92
46	Ernst Besser & BroDrawing paper	22 50
"	Irlbacker & DavisSundries	10.34
"	Hugh McDonaldHorse shoeing	10.00
"	Star Oil CoOil	23.63
46	Irlbacher & Davis plugs	7,50
"	Henry BurgeSaw dust	15.00
"	Ohio Oil CoTurpin oil	26.25
44	Jos. SuppleRepairs on row boat	5. 0 0
"	J. N. MatthewsAdvertising	37.13
"	Barnd & Geiger Connecting service pipe.	8.08
. "	Adams, Moulton & Co. Lumber	484.52
44	D. McNaughtonLumber and material	97.14
"	Weed & CoSundries	18.75
44	Doyle & MaharOil	26.00
46	S. McCutcheonSundries	20. 25
46	C. E. BrinkworthBadges	11.50
"	C. J. HeinoldSundries	24.50
"	A. GakellHay for bedding	11.44
"	Loegler & LaddRepairing hay cutter	1.75
"	Buffalo Scale CoTesting scales	3.20
"	Peter MaischoffRecutting files	9.94
"	H. Becker & CoRepairing harness, etc.	44-77
"	Hall & Son Fire brick	25.00
46	The Eddy Valve Co stem and nut	4.50
"	Farrar & TreftsLabor and material	31.01
"	J. Auchinvole, agtUse of ferry boat	90.00
44	The Bell Telephone Co. Telephone rent	147.50
66	Goodyear Rubber Co Packing	60.04

1883.		
Aug. 27,	Cornell Lead CoLead	888. 22
"	Lee, Smith & MooreCoal	8,476.25
"	Fries & CoCorporation cocks	376.07
44	Pratt & CoSundries	47.37
44	Pratt & CoSundries	127.71
Sept. 3,	Norman E. MackPrinting, etc	20 50
44	J. Val. NeureiterStaves	50.00
"	Plumb, Burdick &	
	Barnard	1.38
44	E. G. FelthousenMaterial	17 19
•6	Young, Lockwood & Co.Stationery	34 7 5
"	John LythMaterial	202.90
"	Young, Lockwood & Co.Stationery	15.15
44	Hardwicke & WareLabor and material	15.70
" .	G. C. Grimard, Cash'r. P. O. stamps	25.00
44	Lee, Smith & MooreCoal	7,914.45
66	Bott & HughesLabor and material	238.40
"	G. C. Grimard, Cash'r. Pay roll, August	3.957.24
Sept. 10,	Felthousen & RussellSundries	13.20
"	G. W. ShawValve repairs	25.20
66	H. McDonaldHorse shoeing	10 60
46	Norman E. MackPrinting	70.00
46	Weed & CoSundries	5.10
46	A. H. BrownLabor	8.00
"	Goodyear Rubber Co Rubber packing	48.19
46	J. V. MarionFeed	46.88
66	N. P. Hinckley, V. SVet. services	12.00
Sept. 17,	Atlas Milling Co Feed	21.05
"	S. Sommerville & Son. Vet. services	11.75
Sept. 10,	Hall & SonsKaolin	4.50
46 .	Lock & MelvilleRepairs	25.45
46	James Boland Repairing and painting	
	at Holly House	40.25

. FIFTEENTH ANNUAL REPORT OF

1883.		
Sept. 10	o, James BolandLaying sewer and ce-	
	menting wall	108.7
"	James BolandRep. at L. Eng. House.	362.70
"	Lenhard MillerWagon repairs	32.3
"	G. C. Grimard, Cash'r. Incidental expenses	100.00
44	Bott & Hughes Painting reservoir fence	358.00
66	Fries & CoCorporation cocks	372.00
Oct. 1	, C. KieferFeed	60.00
44	Lake Erie Boiler Works. Labor and material	59.90
44	Taylor & CrateLumber	3.20
46	Hardwicke & WareSundries	4.48
"	F. S. PeaseOil	23.50
"	Farrar & TreftsLabor and material	141.60
44	Ulbrich & KingsleySundries	14.00
44	James BolandLabor	52.50
"	J. Harris, AgentSoft soap	12.50
44	S. D. ColieLumber	573.84
"	F. S. PeaseOil	60.21
46	Lee, Smith & MooreCoal	2,842.66
46	Jeremiah McCarthyExamination inlet pier.	935.00
Oct. 14	, Weed & CoSundries	3.70
* 46	Hugh McDonaldHorse shoeing	11.20
"	Goodyear Rubber Co Coat	4.00
"	Brady & MaltbyCoping and clamps	75.00
"	G. W. ShawSundries	57-43
	Felthousen & RussellSundries	4.65
"	Lee, Smith & MooreCoal	17.85
"	John C. PostSundries,	6.05
"	John ChamberlainLabor	25.50
**	Lee, Smith & Moore Unloading coal	29.45
"	John LythSundries	69.50
"	Vosburgh & BakerManilla rope	13.96
44	C E Walbridge Cash hoves etc	70.00

THE BUFFALO CITY WATER WORKS.

1883.		
Oct. 22,	L. Miller	31.05
"	W. Filsinger & Bro Hay	32.04
"	Hamilton CherryHay	24.68
"	The Courier CoCopy Daily Courier	5.00
46	E. G. FelthousenSundries	43.05
"	Powell & PlimptonSundries	4.17
",	National Meter Co Meter glasses	3.00
46	Ludlow Valve M'f'g Co.Fire hydrants	768.75
"	Reinecke & ZeschAdvertising	21.75
"	C. J. HamiltonDoor frame	2.00
••	Norman E. MackStationery	58.50
"	John ReimanLabor and material	26 .19
,,	R. ChilcottLabor	244.76
"	L. MillerWagon repairs	8.35
46	L. MillerWagon repairs	26.10
"	G. C. Grimard, Cash'rP. O. stamps	25.00
44	Bott & Hughes Painting fences	107.80
Nov. 12,	John C. PostOil	8.10
"	Hardwicke & WareSundries	3.33
46	A. H. BrownLabor and material	7.80
66	Felthousen & RussellSundries	3.80
44	Goodyear Rubber Co Packing	20.35
44	Hall & SonsKaolin	2.25
"	F. S. PeaseOil	26.00
"	Holly Manu'f'g CoLabor and castings	46. 0 0
"	F. HeldAdvertising Dodge farm	2.75
" ,	Jos. Rehm Washing towels	7.50
44	Ludlow Valve M'f'g Co. Hydrants	345.00
"	W. W. Tupper & CoGrates	55 89
44	G. W. Shaw Sundries	157.91
"	Norman E. MackAdvertising	74.00
"	Bott & Hughes Painting, etc	521.20
• 6	C. J. HamiltonLumber	33.6 8

FIFTEENTH ANNUAL REPORT OF

1883.		
Nov. 12,	E. G. FelthousenSundries	\$ 2.00
"	Pratt & CoSundries	108.76
"	Cornell Lead CoPig lead	862.75
Nov. 19.	A. GeekieBedding	10.91
66	Buffalo Gas Light CoCoke	18.00
"	Vosburgh & BakerManilla rope	4. 96
"	James BolandLabor and material	4.60
"	Machwirth BrosStove	19.00
"	Adams, Moulton & Co. Lumber	41.00
"	S. D. ColieLumber	7.65
"	J. V. MarionCorn	7. 22
"	C. KeiferOats	47.87
"	G. C. Grimard, Cash'r. P. O. stamps	25.00
"	Lee, Smith & MooreCoal	9,009.83
Nov. 26,	Bickford & CurtissLace, etc	2.37
46	Young, Lockwood & Co. Sundries	66.84
Dec. 3,	Hardwicke & WareSolder	1.16
"	Hawley KleineLabor and material	6.25
"	J. N. Adam & Co Horse blankets	13.50
"	Ludlow Valve M'f'g Co. 10 hydrants	30 7 .50
"	Sutton & Wood iron tank	55.00
"	H. R. WorthingtonLabor and material	2.00
"	Atlas Milling Co Feed	9.15
"	Fries & CoCorporation cocks	348.67
"	Hugh McDonaldHorse shoeing	19.20
"	Pratt & CoSundries	14.58
Dec. 17,	Lee, Smith & MooreCoal	8,591.33
"	Val. NeureiterStaves	88.8o
"	James D. WarrenAdvertising	5.00
"	Andrew GeckelHay	118.06
44	Jacob GintherHorse trough	176.00
"	Felthousen & Russello shade holders	.25
"	Williamsville Lime Co. r. harrel lime	7.6-

1883.		
_	, F. S. Pease	51.00
"	Hugh McDonald Horse shoeing	9.20
"	Lee, Smith & Moore2 tons coal	10.60
Dec. 24.	·	1.00
"	Lee, Smith & Moore Trimming coal	28.48
"	H. CherryHay	48.24
"	Hardwicke & WareLabor and material	49.42
44	E. & B. Holmes. Lumber	11.88
"	Jabesh HarrisSoft soap	12.50
"	French & KirkholderStable supplies	1.40
"	Pratt & CoSundries	54.81
"	Hardwicke & WareLabor and material	2.88
" `	Vosburgh & BakerSundries	.93
"	Henry Becker & CoHarness repairs	11.20
44	Jno. C. PostRed lead	1.08
"	G. W. Shaw Piston packing	15.00
"	Weed & Co Merchandise	15.63
"	Nelson HollandLumber	71.20
44	G. W. ShawValve rubber	104 40
"	A. H. BrownCopper gasket, etc	41.57
44	Goodyear Rubber Co Pure packing	17.06
44	Christ StevensFacing rubber valves	14.50
"	Brush Bros	80.00
44	H. D. TylerWashers	2.18
46	Valentine & SonRepair padlocks	1.50
"	Charles KieferStraw	61.01
"	F. S. PeaseOil	83.18
"	Fries & CoLabor and material	9.10
"	Lee, Smith & MooreTrimming coal	27.99
"	Jno C. PostOil	4.49
"	Felthousen & RussellSundries	11.76
46	Lee, Smith & MooreHoisting coal	93.64
46	H. Becker & Co Harness repairs	37.72

THE BUFFALO CITY WATER WORKS.

1883.		
Dec. 24,	E. G. Felthousen\$	29.19
"	Hersee & CoLabor and material	25.00
Dec. 31,	Young, Lockwood & Co. Stationery	11.05
"	The Courier Co Daily Courier	2.50
"	C. J. MerrillSundries	31.75
"	C. J. HeinoldPomade	10.00
66	Farrar & TreftsLabor and material	966.34
"	Machwirth BrosLabor and material	122.21
"	Farrar & TreftsLabor and material	98.96
"	Farrar & TreftsLabor and material	27.13
"	Farrar & TrestsLabor and material	78.02
"	Irlbacker & DavisSundries	3.46
"	C. C. HainesBungs	7.50
"	Farrar & TreftsLabor and material	277.78
"	Farrar & TreftsLabor and material	78.71
"	Norman E. MackStationery	1.008
"	Weed & CoSundries	12.72
"	E. G. FelthousenSundries	5.50
"	Machwirth BrosLabor and material	768.18
"	Jno. C. Harvey Labor and material	5.50
"	Geo. M. ShawPacking	7.20
"	Farrar & TreftsLabor and material	148.25
"	S. McCutcheon Boiler compound	18.75
+6	Powell & PlimptonSundries	. 36
"	Lee, Smith & MooreCoal	29.75
"	Farrar & TreftsLabor and material	228.17
"	Fries & CoCorp. cocks & sundries	6.75
"	Goodyear Rubber Co Sundries	12.65
"	Nelson HollandLumber	59.49
"	C. J. HamiltonLumber	34.55
"	H. G. TroutLabor and material	61.58
"	James BolandRepairs, Worth. boilers.	10 50
"	Atlas Milling Co. Food	0

THE BUFFALO CITY WATER WO	v	BUFFALO	W۵	TER	WORKS
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1883.	•	
Dec. 31,	R. H. Thayer & CoHydrant boxes\$	692.45
"	James BolandRepairing trenches	975.14
46	Maytham Line of Tugs. Use of tugs	10.00
46	Henry BurgeSaw dust	9.00
66	S. ChamberlainWagon repairs	29.85
66	S. ChamberlainWagon repairs	28.54
46	Buffalo Gas Light Co Repair service pipe	16.83
	\$8 ₇	,193 53

Calo on hand January 1, 1883, 5,140 tons.

METER STATEMENT

	188
	Η,
	Jan.
	ts Ending Jan. 1, 188
	Months
7 2	Twelve.
	or the
MEIEK SIAIEMEN	tatement Showing Revenue per Met:r Measurement for the Twelve Months
ME	Meter
	per
	Revenue
	Showing
	tatement

	Location.	-ELIP)				
Consumer	No. Street.	!			Vevenue.	
Adam, Meldrum & Anderson	396 Main	I Elev. hoist Howard.	Howard		\$ 75.38	
Barnes, Bancroft & Co	260 Main	I Elev. hoist Howard.	Howard		90.32	•
Benz, J	813 Broadway	1	Union	27.00	3.73	3.73 2 months.
Benz, J	815 Broadway	1	Union	27.00	11.19	2 months
Beard, P. D.	263 Washington	I Elev. hoist	Howard		57.64	:
Barnum, S. O. & Son	265 Main	I Elev. hoist			142.62	:
Bell, R. W. & Co	77 Washington	7	Worthington	\$ 51.52	146.64	
Beck, Magnus	467 N. Division	, ,	Gem	49.50	225.02	
Boller & Dectenment	248 Carroll	271	Union	42.00	Ar 101	
Brock & Wiener	64 Exchange	T Flev hoier	Howard	3	12 17	: : : :
Buffalo Car Mfg. Co.	1213 Clinton	4	Gem	108.00	273.86	
Buffalo Gas Light Co	249 W. Genesee	4	Gem	198.00	332.98	
Ruch & Howard	224 Scott	~	Worthington	51.52		
Dust of 110 wald	- 24	%1 ~	Union	42.00		
Buffalo Starch Works	320 Court	1 3	Union	106.50		
Clark Manufacturing Co	424 Niagara	1,7	Union	42.00		
Citizens' Gas Light Co	293 Court	4	Union	209.00	364.91	:
Clinton Brewing Co	Io W. Bennett	77.	Worthington	41.40	71.83	
Cornell Lead Works	462 W. Virginia	7	Union	63.00	. 5.05	
Co-operative Brewing Co	r6o High		Gem	8.66	205.01	:
Cook, E. N. & Co	481 Spring	3	Union	106 50	⊢	
De Laney Forge & Iron Co.	300 Perry		Union	106.50	143.78	
Driscoll, Mrs	104 Burton alley	. I	Union	27.05	30.53	
Dold Iscob	711 William		Gem	99.00	243 66	
		~ ~	Worthington	51.52	66.64	

Exstein, Hiram	185	185 Washington	2 Elv	. hoists	2 Elv. hoists Howard		82.18	
Exstein, Hiram	4	47 Exchange	Ē	v. hoist	I Elev. hoist Howard	:	103.64	
Farthing, G. & T	153	153 Pratt	_	4	Union	200.00	593.64 9 months.	
Frank & Co	176	176 L Terrace	_	_	Union	27.00	81.82	
Buffalo Scale Works	350	320 Exchange	-	-	Union	27 00	8.98 2 months.	
Clark, Thomas	- 6 <u>1</u>	19 Perry	7	7, a	Union	62.00	6.19 2 months.	
Drullard & Hayes	2	344 Exchange	7	χ.	Union	8 5 8 6 8 6	7.21 2 months.	
Farrar & Trefts		54 Perry		t = 0	Union	27.00	7 69.2 months.	
Gerber, Charles	821	821 Main	- [1 (1)	Gem	49.50	122.57	
Goodyear Aubber Co	5 	9 w. Seneca	<u> </u>	V. DOIST	Howard		55.85	
Haas, David	650	650 Spring	~~	17	Worthington	41.40	4.62 2 months.	
Hamilton, C. J	103	103 Erie	Ē	17.	Worthington	41.40	48 21	
Hayen, J. F	222	222 Main	E	v. hoist	Howard		298.77	
Harvey & Henry	101	107 Chicago	-		Union	106.50	714.43	
Haberstro, J. L.	=	II High	-	4	Union	200.00	65.50	
Hersee & Co.	247	247 Ellicott	н	_	Union	27.00	11.28 9 months.	
Howard Iron Works	285	285 Chicago	_	61	Worthington	51.52	202.47	
Holmes, E. & B	187	Michigan	-	~	Union	63 00	84.63	
Hubbell Bros	8	60 Scott	H	_	Union	27.00	15.50 2 months	
Jost Brewing Co.	42I	421 Broadway	н	6	Sem	00.66 00.00	63.05 7 months.	
Kaitenbach, F. X.	462	462 Eagle	-		Sea Sea	99.00	180.67	
Kip Hammer Works	140	W. Virginia	H	72	Union	42.00	3.37 3 months.	
O 112			_		Gen	49.50		
MINGK, C	<u>~</u>	So Depot	ю Т	~	Worthington	51.52	564.80	
	,		_	1,7	Onton	42.00		
Kunn, J. F.	648	648 Broadway	н	۲,	Union	. 63.00	10.48 2 months.	
Kreinder, W. & Co	481	481 Spring	H	7%	Union	42.00	3.06 2 months.	
Lang, G	6	400 Best	=	4	Gem	198.00	377.36	

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			3	-		
	Street.	No. 14	Vind.		Kevenue.	
	752 Clinton	1 3	Gem	00.66 •••	\$ 141.85	
<u>ن</u>	861 Main	1 1%	Union	42.00	71.42	71.42 9 months.
Laverack & Co 23	231 Washington	I Elev. hoist	Howard		154.11	<u>:</u>
	301 Emslie	2 17	Union	84.00	94.22	
	183 Washington	I Elev. hoist	Howard		78.28	
Mason, S. L. & Bro 21	210 Scott	I 2	Worthington	51.52	152.22	
	686 Earline	1 Elev. Holst.	Union	72 00		:
		~ ~	Union	63.00		
Mutual Gas Light Co 54	545 Elk	. 3	Union	106.50	%.%	
Niagara Elevator37	375 Ohio		Worthington	51.52	145.01	
Oppenheimer & Co 20	204 L. Terrace	I Elev. hoist	Howard			
:	159 Ellicott	7/1	•	41.40	15.82	15.82 2 months.
-	388 Delaware avenue	r Elev. hoist			96.19	
- : :	. Tonawanda	1 4	Union	200.00	250.99	
adi : : :	. 406 Fifth	1 3	Gem	80.66	190.47	
Powell & Plimpton 20	297 Washington	I Elev. hoist	Howard		101.75	
Plumb, Burdict & Barnard. 6	637 Clinton	0 0	Crown	75.00	551.22	-1
Ramsdell, Sweet & Co 2	215 Washington	I Elev. hoist	Howard	49.50	310.35	=
- :	95 Roos alley	4	Gem	198.00	347.61	
Rochevot George	tora lefferson	2 ~ 2	Gem	49.50		
		~ ~	Union	63.00	•	

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ı				7	C IF	Œ	[]	Βι	F	FA	L	0	C	rı:	Y	1	N.	ΑΊ	Œ	R	V	Vo	R	K:	5.					
85.21	88.61	95.26	11.96		194.50	12.55, 5 months	397.33	425.84	106.74	81.01		48.52	12.08	142 25	61.99	102.24	16.20 2 months.	43.72	77.59	53.II	T. KEO. 83		246.38		79.31	55.28	63.42	84.51	158.34	23.89
63.00	51.52		27.00	63.00	106.50	198.00	25.001	103.04	84.00	42.00	126.00		19.00	42.00	63.00	: : : : : : : : : : : : : : : : : : : :	:	42 00	: : : : : : : : : : : : : : : : : : : :	:	200.00	106.50	99.00 00.66	49.50	27.00	103.04	8 8 8	51.52	: : : : : :	: : : : : : : : : : : : : : : : : : : :
Union	Worthington	Howard	Union	Union	Union	Gen	Union	Worthington	Union	Union	Union	Howard	Union	Union	_	Howard	Gem	Union	Howard	_	Union	Union	Gem	Gem	Union	Worth:ngton	Gem	Worthington	Howard	Howard
75		ev. hoist	-	61	60	4		•	7,	z,	64	Elev. hoist	×	1,7	64	Elev. hoist		1, %1	ev. hoist	Elev. hoist	-	3	س	61		64	6	~	Elev. hoist	Elev. hoist
~~	-	Ĭ	_	_	_	_	_	64	~	_	~	ធ្មី		_	_	ᅙ	:	_	豆豆	ធ្មី	~	~	~	~		8		į	ឆ្នាំ	豆,
132 Lake View ave	367 Carroll	68 Main	191 Clinton	236 Clinton	111 Mill	534 Louisiana	42 Hudson	rog Mississippi	698 Carroll	T.T F. Belie	· · · · · · · · · · · · · · · · · · ·	472 Main	29 Tonawauda	226 Ohio	212 Erie	66 Broadway	522 Seventh	2co Cherry	304 Main	391 Main	2.12 Oneida		702 Main		292 Elm	283 Perry	72 Lake View ave	312 Exchange	563 Main	563 Main
Schaeffer, A	Strauss, M.	pard, S. & Co	pard, S. & Co	pard, S. & Co	er. W. S	wille, J. & N. C	oelkopf Sons	Schoelkopf & Co	Sloan, W. W	Schmealer I		Schlund & Doll	ompson, T. E	Trout, H. G	Phornton & Chester	Jilman, D	Schaeffer Bros	Uebelhoer, J	Vosburgh, Whiting & Co	Weller, J. J	Wesn Lautz Bros & Co.		Wevand C		Weller, J. J	:	:	:		Menker. H. A

METER STATEMENT:-Continued.

	I.ocation.	٠	l		••		
Consumer	o N	Street.	No.M.	Kind.	Cost.	Revenue.	
Zeiler, George	1147 Main		1 1%	Worthington	\$ 41.40	\$ 10.83	10.83 4 months.
Ziegele, A	Main			Gem	148.50	442.35	
Stafford & Co	Main	:	I Elev. hoist	Howard	3 : :	83.00	
Schleucher & Co	649 Spring	:	7/1 1	Union	42.00	1 28	I 28 2 months.
American Glucose Co	188 Scott.		1 6 4 0	Union	209.00	23,375.37	:
American Glucose Co	320 Court.	·	7 9 1 I	Union	63.00	5.501.91	
American Glucose Co	12 Mortimer	ner	1 6	Union	209.00	5,053.70	5.053.70 5 months
B. N. Y. & P. R. R. Co	Tank	:	9 1	Gem	450.00	656 45	:
L. S. & M. S. R. R. Co	Tanks.		4 4	Gem	594.00	3,791.90	
N. Y., L. E. & W. R. R. Co.	Tanks, etc	etc	ωн .4α	Gem	594.00 40.50		
N. Y., L. E. & W. R. R. Co.	Tank		7,1 I 1 I	Crown	30.00	- 6	
N. Y., L. E. & W. R. R. Co.	:		1 10	Gem	96.96 96.96 96.96	-	
N. Y. C. & H. R. R. R. Co.	Tanks		ე∺ ც ‡ 4-0	Union	200.00 200.00	4.473.09	
N. Y. C. & St. L. R. R. Co.	Tank.		4	Union	209.00	66.12	66.12 7 months.

)N	THE	W1							
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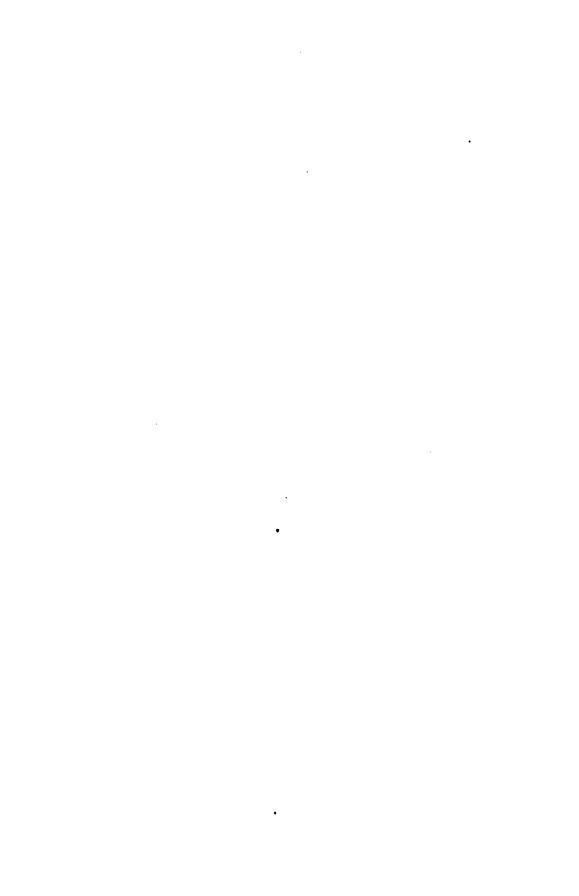
DISTRIBUTION

OF THE

WATER DEPARTMENT

FOR THE

YEAR 1883.



FIRE HYDRANTS.

The number of Fire Hydrants placed during the year on new lines of pipe was one hundred and fourteen, of which forty-two were on the High and seventy-two on the Reservoir supply. Making the total number in the city on January 1st, 1884, one thousand four hundred and seven.

LOCATION AND KIND OF HYDRANTS SET IN NEW MAINS, FROM JANUARY 1, 1883, TO DECEMBER 31, 1883.

Location.	System. Kind	d. Hayes. L	udlow. Total.
Ashland avenue, west side, 480 ft south			
of Bryant	H. 2 n.	L	I
Bird avenue, northwest corner of De-			
witt	R. "	• •	1
Bird avenue, north side, opposite Her-			
kimer	" "		1
Bird avenue, northwest corner of			
Grant			I
Bryant street, southeast corner of			
Ashland avenue	H. 2 n.	H. I	• •
Bryant street, southeast corner of			
Howard avenue	" "	1	• •
Burton alley, northwest corner of Bos-			
ton alley	" 2 n.	L	I
Carlton street, north side, 470 ft. east			
of Jefferson	" 2 n.	Н. 1	• •
Carlton street, north side, 940 ft. east			
of Jefferson	" "	I	
Cayuga street, north side, 700 ft. east			•
of Jefferson	" 2 n.	L	1
Chenango street, southeast corner of			
Massachusetts	R. "	• •	1

Location.	System, Kind. Hayes, Ludlow. Total-
Chenango street, southeast corner of	
Ferry	R. 2 n. H. 1
Dodge street, south side, 380 ft. east	
of Michigan	H. 2 n. L 1
Dodge street, southwest cor. of Masten	" " I
Elk street, southwest corner of Selkirk	R. " I
Elk street, south side, 250 ft. east of	•
Selkirk	" 2 n. H. I
Elk street, southwest corner of Lee	" I
Elk street, southwest cor. of Peabody	" " I
Elk street, southwest cor. of Maurice	" 2 n. L 1
Elk street, southwest cor. of Babcock	" " · I
Ellicott street, southwest corner of	
Dodge	н. " т
Farmer street, southwest corner of	
Gurnsey	R. " 1
Ferry street, northwest corner of	
West avenue	" " I
Fifteenth Street, southwest corner of	•
Vermont	H. 2 n. H. 1
Fillmore avenue, northwest corner of	
North Division	R. 2 n. L 1
Fillmore avenue, northwest corner of	
Jerry	" " I
Fillmore avenue, west side, 485 feet	
north of William	" " I
Fillmore avenue, southwest corner of	
Peckham	" " I
Fourteenth street, southwest corner of	
Massachusetts	" " I
Fox street, east side, 485 ft. south of	
Genesee	" 2 n. H. 1
Fox street, east side, 970 ft. south of	
Genesee	" " · 1 · ·

Location.	System. Kind. Hayes. Ludlow. Tot	al.
Fox street, northeast corner of Syca-		
more	R. 2 n. H. 1	
Genesee street, southeast corner of		
Guilford	" " I	
Genesee street, southeast corner of		
Reed	" " I	
Genesee street, southeast corner of		
Strauss	" " I	
Genesee street, southeast corner of		
Fillmore avenue	" " i	
Genesee street, south side, 425 ft.		
east of Fillmore avenue	" " I	
Goodrich street, northeast corner of		
Ellicott	H. " I	
Goodrich street, northwest corner of		
Oak	" " I	
Goodrich street, northwest corner of	·	
Elm	" " I	
Grey street, east side, 440 ft. north of		
Broadway	R. 2 n. L 1	
Grey street, east side, 880 ft. north of		
Broadway	" " I	
Hamilton street, northwest corner of		
Thompson	" " I	
Herman street, west side, 455 feet		
south of Genesee	" " I	
Herman street, west side, 910 feet		
south of Genesee	" " I	
Herman street, northwest corner of		
Sycamore	" " I	
Howard avenue, west side, 475 feet		
south of Bryant	H. 2 n. H. I	
Howard avenue, west side, 950 feet		
south of Bryant	" " <u>I</u>	

Location.	System. Kind. Hayes. Ludlow. Total.
Howard avenue, northwest corner of	
Summer	H. 2 n. H. 1
Howard street, southeast corner of	" " I
Monroe	R. 2 n. L 1
Howard street, southwest corner of	
Montgomery	" " I
Howard street, southwest corner of	
Raze	" " I
John street, east side, 30 ft. south of	
Bemis alley	Н. " 1
Johnson street, west side, 470 feet	
south of Genesee	R. 2 n. H. 1
Johnson street, west side, 940 feet	
south of Genesee	" " I
Krettner street, east side, 500 ft. south	
of Peckham	" 2 n. L 1
Lemon street, southwest cor. of North	H. 2 n. H. 1
Locust street, southwest cor. of North	" " I
Lord street, northwest cor. of Eagle.	R. " 1
Main street, southeast corner of Jeff-	
erson	H. 2 n. L 1
Main street, southeast corner of Hum-	
boldt parkway	" 2 n. H. I
Main street, northeast corner of For-	2 22.
est avenue	" 2 n, L, 1 •
Main street, southeast cor. of Leroy	
avenue	" " I
Main street, northeast cor. of Jewett	• • •
avenue	" " I
Main street, southeast corner of Am-	
herst	" 2 n. H. 1
Metcalfe street, northwest corner of	- ··· - · · ·
Howard	R. 2 n. L 1
ALUMBIU	15. , a 11. 12. · · · · ·

Location.	System	n. Kind. H	ayes. I	udlow. Total.
Michigan street, northwest corner of				
Riley	Η.	2 n. L.		I
Michigan street, west side, opposite				
Laurel	"	46	• •	ı
Michigan street, west side, 480 feet				
north of Glenwood avenue	"	"		I
Monroe street, west side, 300 ft. north				
of Clinton	R.	"		I
Monroe street, west side, 290 ft. north				
of Howard	"	"		I
Monroe street, west side, 500 ft. north				
of William	"	"		I
North street, southwest corner of Elli-			-	_
cott	Н.	66		I
North street, southeast cor. of Elm	"	"		1
Oak street, northeast cor. of North	"	2 n. H.	1	•
Peach street, southwest cor. of Best	**	2 n. L.		
Peckham street, northwest corner of		• 11. 17.	••	•
Coit	R.	"		_
Peckham street, northwest corner of	IX.		• •	I
Detroit	"	"		_
Peckham street, northwest corner of			••	I
·	"	"		
Townsend	••	••	• •	I
Peckham street, northwest corner of	66	"		
Wilson			• •	I
Ralph alley, southeast cor. of Virginia	H.	. "	••	I
Rhode Island street, southwest corner				
of Fourteenth	R.	"	••	I
Rhode Island street, southeast corner				
of Fifteenth	"	"	• •	I
Rhode Island street, southwest corner				
of Bremen	"	"		1
Rhode Island street, southeast corner				
of Utica	"	66	••	I

Lecation.	System. Kind. Hayes. Ludlow. Total.
Rhode Island street, southwest corner	
of Eighteenth	R. 2 n. L 1
Rhode Island street, southeast corner	
of Chenango	" " I
Selkirk street, southwest cor. of Perry	" " I
Sherman street, east side, 465 feet	
south of Genesee	" " r
Sherman street, east side, 930 feet	
south of Genesee	" " I
Sherman street, northeast corner of	
Sycamore	" " I
Shumway street, west side, 500 feet	
north of William	" " I
Smith street, southwest cor. of Perry	" " I
Smith street, southwest cor. of Fulton	" " I
Smith street, northeast cor. of Clifford	" 2 n. H. 1
Stanton street, west side, 500 feet	
north of William	" 2 n. L I
Stanton street, northeast corner of	
Lovejoy	" " I
Summer street, southwest corner of	
Main	н. " т
Summer street, northeast corner of	
Ashland avenue	" 2 n. H. r
Tousey street, northwest corner of	
Champlin	R. 2 n. L 1
Utica street, southwest corner of	
Michigan	H. 2 n. H. 1
Utica street, southwest corner of	
Masten	" " 1
Utica street, southwest cor. of Purdy	" 2 n. L I
Utica street, southwest corner of	
Jefferson	" " I
Waverly street, notheast cor. of Ferry	
waverry street, notheast cor. of refry	• • 1

Location.	System, Kind, H	layes.	Ludlow.	Total.
Waverly street, southeast corner of				
R. R. avenue	H. 2 n. L.			
West avenue, northwest cor. of Albany	R. 2 n. H.	I		
William street, north side, 1,250 fee:				
east of Babcock	" 2 n. L.		I	
William street, northwest corner of				
Central avenue	" 2 n. H.	1		
Williamsville road, northeast corner of				
William	" 2 n. L.		I	
Williamsville road, northeast corner				
of Ludington	" "		I	
Williamsville road, southeast corner				
of Lovejoy	" "		I	
Williamsville road, northwest corner				
of Broadway	"		I	
Williamsville road, east side, 1,275				
feet north of Broadway	"	••	I	
Total Hydrants set in 1883	_	37	77	114
On High Service		19	23	42.
On Reservoir Service		18	54	72
on reserven service				
Total, as above		37	77	114
Set in previous years	1,299			
Abandoned in 1883	6		I	,293
Total Hydrants in City,				
December 31st, 1883			1	,407
0 , 3				, , ,

H. stands for Holly or High Service.

R. stands for Reservoir Supply.

² n. H. stands for two nozzle Hayes Hydrant.

² n. L. stands for two nozzle Ludlow Hydrant.

NEW HYDRANTS PUT IN TO REPLACE OLD ONES.

Location.	System. Kind. Hayes. Ludlow.
Adams street, east side, opp. Brown.	R. 2 n. L 1 S.
Allen street, northwest cor. of North	
Pearl	H. 2 n. H. 1 S.
Broadway, northeast corner of Ash	R. " 1 S.
Burton alley, northwest cor. of Oak	H. 2 n. L 1 S.
Carolina street, northwest corner of	
Fourth	R. " 1 S.
Carroll street, northeast cor. of Wells	" 2 n. H. 1
Carroll street, north side, 580 ft. east	
of Chicago	" " I
Cherry street, south side, opp. Peach.	" 2 n. L I S.
Chippewa street, southeast corner of	
Washington	H. 2 n. H. 1 S.
Chippewa street, northwest corner of	
Ellicott	R. " r S.
Clinton street, northeast corner of El-	
licott	" 2 n. L 1 S.
Clinton street, southwest cor. of Oak.	" " ı S.
Clinton street, southwest corner of	
Michigan	" " ı S.
Clinton street, north side, 400 feet	
east of Michigan	" " r S.
Clinton street, southwest corner of	
Union	" " I S.
Columbia street, southwest corner of	
Ohio	"2 n. H. 1
Court street, northwest cor. of Staats.	" " I
Delaware avenue, southeast corner of	
Barker	H. " I S.
Delaware avenue, southeast corner of	
Utica	" 2 n. L I

Location.	System.	Kind.	Hayes.	Ludlow.
Depot street, west side, 500 feet south				
of William	R. 2	n. H.	I	• •
Eagle street, northeast corner of Oak		n. L.		ıS.
Eagle street, southeast corner of Elm	"	"		ıS.
Eagle street, northwest cor. of Watson	" 2	n. H.	1	
Efner street, northwest corner of Vir-				
ginia	" 2	n. L.		r S.
Elk street, southeast corner of Michi-				
gan	" 2	n. H.	I	S.
Elk street, southwest corner of Louis-				
iana	. "	66	1	S.
Elk street, south side, opp. Hayward.	44	"	· [S.
Elk street, southwest corner of Van				
Rensselaer	"	"	1	• •
Ellicott street, southeast corner of				
Broadway	" ;	2 n, L.	••	r S.
Ellicott street, west side, 300 feet				
north of Carlton	H.	"	• •	ıS.
Elm street, west side, 325 feet north				
of Tupper		2 n. H.		S.
Elm street, northeast cor. of Carlton.	" ;	2 n. L.	• •	ıS.
Emslie street, northeast corner of				
Seymour	R.	• 6		r S.
Emslie street, northeast corner of				
South Division	44	66	• •	ıS.
Emslie street, northeast corner of				
North Division	" :	2 n. H.	I	• •
Exchange street, southwest corner of				
Beak	"	2 n. L.		ıS.
Exchange street, northwest corner of				
Michigan	"	2 n. H.	I	S.
Exchange street, south side, 300 feet				
east of Chicago	"	2 n. L.	1	S.

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Location.	Syst	em.	Kind.	Hayes,	Lud	low.
Exchange street, south side, 342 feet				•		
east of Louisiana	R	2	n. L.		1	s.
Exchange street, south side, 687 feet						
east of Louisiana	"		"	• •	1	s.
Exchange street, south side, 290 feet						
east of Alabama	46		"		I	S.
Exchange street, northeast corner of						
Van Rensselaer	"		"		I	S.
Fifth street, northwest corner of Root	"		"		1	S.
Fifth street, southwest corner of Penn-						
sylvania	"		"	• •	I	S.
Folsom street, south side, 475 feet						
east of Michigan	"	I	n. H.	1		
Folsom street, southeast corner of						
Chicago	"	2	n. L.		I	s.
Fourteenth street, west side, 310 feet						
north of York	H.		"		I	S.
Franklin street, southeast corner of						
Seneca	"	2	n. H.	I		
Franklin street, west side, 33 feet						
south of Swan	"	2	n. L.		·	S.
Franklin street, southwest corner of						
Court	"		"		I	S.
Franklin street, east side, 30 feet south						
of Mohawk	"		"	• •	1	S.
Franklin street, east side, 380 feet						
north of Chippewa	"		"		1	S.
Franklin street, east side, 760 feet						
north of Chippewa	"		"		I	S.
Franklin street, northwest corner of						
Allen	"	2 !	n. H.	1		S.
Franklin street, east side, 325 feet						
north of Allen	"		.66	1		S.

Location.	System. Kind.	Hayes,	Ludlow.
Front avenue, east side, 270 feet north of Porter avenue	D		0
Front avenue, east side, 310 feet north	R. 2 n. L.	• • •	ı S.
of Connecticut			- 0
Genesee street, northwest corner of		• •	ı S.
Ellicott	H. 2 n. H	. т	S.
Genesee street, southeast corner of	11. 2 11. 11		5.
Oak	R. "	I	S.
Genesee street, northwest corner of	14.	•	5.
Elm		1	S.
Genesee street, southeast corner of		•	0.
Ash	" "	I	S.
Genesee street, northwest corner of		-	
Spruce		I	S.
Genesee street, southwest corner of			
Walnut	"	I	S.
Genesee street, northwest corner of			
Hickory	"	I	S.
Genesee street, southeast corner of			
Pratt	"	1	S.
Genesee street, southwest corner of			
Mortimer	** **	I	S.
Genesee street, southeast corner of			
Kane	." "	1	S.
Genesee street, southwest corner of			
Jefferson	66 66	I	S.
Hamilton street, northeast corner of			
East	" 2 n. L.	• •	ı S.
Heacock street, northeast corner of			
Porter	" 2 n. H.	_	••
High street, southeast corner of Main	H. 2 n. L.	• •	ıS.
High street, southeast corner of Wash-			_
ington	44 46	• •	r S.

Location,	System. Kind. Hayes. Ludlow.
High street, southwest corner of Elli-	
cott	H. 2 n. L 1 S.
Hudson street, northeast corner of	•
Prospect avenue	" " r S.
Irving place, northeast cor. of Allen.	H. " I S.
Irving place, southeast cor. of North.	" " ı S.
Jefferson street, southwest corner of	
Peckham	R. 2 n. H. 1 S.
Johnson place, south side, 500 feet	
west of Delaware avenue	" " I S.
Louisiana street, southeast corner of	
Ohio	" 2 n. L r S.
Louisiana street, northeast corner of	
South	" ı n. H. ı S.
Louisiana street, northeast corner of	
Miami	" 2 n. L 1 S.
Mackinaw street, southwest corner of	
Vandalia	" " ı S.
Main street, southeast cor. of Perry	" " ı S.
Main street, northwest corner of Han-	
over	" " i S.
Main street, northwest corner Lloyd	" " r S.
Main street, northeast corner of Quay	" " I S.
Main street, northeast cor. of Seneca.	" " ı S.
Main street, northeast cor. of Swan	" " ı S.
Main street, southeast corner of Clin-	
ton	H. 2 n. H. I
Main street, northwest corner of Chip-	
pewa	" " I
Main street, southeast cor. of Tupper	1 "
Main street, northeast corner of Del-	
avan avenue	" 2 n. L I S.

Location.	System. Kind. Hay	es. Ludlow.
Maryland street, southwest corner		
of Sixth	R. 2 n. H. 1	S.
Michigan street, southeast corner of		
Folsom	" " 1	S.
Michigan street, southwest corner of		
North Division	" 2 n. L	r S
Michigan street, southeast corner of	•	
Broadway	""	r S.
Michigan street, west side, 330 feet		
north of Tupper	" 2 n. H. 1	••
Niagara street, northeast corner of		
Delaware avenue	" 2 n. L	ı S.
Niagara street, southwest corner of		
Mohawk	" 2 n. H. 1	S.
Niagara street, northwest corner of		
Georgia	" 2 n. L	ı S.
Niagara street, southwest corner of		
Maryland	" 2 n. H. 1	S.
Niagara street, east side, 310 feet		
north of Maryland	" 2 n. L	ı S.
Niagara street, northwest corner of		
Hudson	" 2 n. H.	S.
Niagara street, southwest corner of		
Pennsylvania	" " 1	S.
Niagara street, northwest corner of	_	
Jersey	" 2 n. L	. 1 S.
Niagara street, southwest corner of		
Rhode Island	" "	ı S.
Niagara street, southwest corner of		
Front avenue	" "	. 1 S.
North Pearl street, northwest corner		
of Virginia	H. 2 n. H.	r S.

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Location.	System	a. Kind.	Hayes.	Ludio	w.
Norton street, northwest corner of					
Water	R.	2 n. L.		I	S.
Oak street, northeast corner of Syca-					
more	"	46	• •	1	S.
Oak street, east side, 325 feet north					
of Sycamore	"	"	• •	1	S.
Ohio street, north side, 250 feet east					
of Chicago	"	2 n. H.	I	• •	
Ohio street, southeast corner of					
Mackinaw	"	54	I	• •	S.
Ohio street, east side, 200 feet south					
of Wabash	"	2 n. L.	٠.	I	S.
Peach street, southwest corner of					
Virginia	H.	46	••	I	S.
Peach street, west side, 300 feet north					
of Virginia	"	"	• •	1	S.
Pearl street, southeast corner of					
Lower Terrace	R.	44	• •	I	S.
Pearl street, northwest corner of					
Upper Terrace	"	2 n. H.	I	• •	S.
Pearl street, west side, 160 feet north					
of Terrace	Н.	ın. H.	I	• •	
Pearl street, southeast corner of					
Church		2 n. H.	I		S.
Pearl street, northeast corner of					
Court	",	"	I	• •	S.
Pearl street, east side, 250 feet south					
of Virginia	"	"	I		
Peckham street, northeast corner of					
Shumway	R.	2 n. L.	••	I	S.
Pine street, east side, opposite Cy-					
press	46	2 n. H.	I	• •	S.

Location.	System. Kind.	Hayes. Ludlow.
Porter avenue, southwest corner of		
Sixth	R. 2 n. L.	1 S.
Prospect avenue, southwest corner of		_
Georgia	"	r S.
Prospect avenue, east side, 310 feet	"	•
north of Carolina	••	г S.
Prospect avenue, west side, 310 feet		- 6
north of Rhode Island		г S.
Prospect avenue, west side, 180 feet	" "	- 6
north of Hampshire		1 S.
Washington	H. 2 n. H.	-
Seneca street, northeast corner of	п. 2 п. гл.	
Ellicott	R. 2 n. L.	г S.
Seneca street, northeast corner of	к. эп. д.	1 5.
Berrick alley	"	1 S.
Seneca street, southwest corner of		
Michigan		1
Seneca street, south side, opposite		-
Dougherty alley	44 44	1 S.
Seneca street, north side, 300 feet		
east of Michigan		г S.
Seneca street, northwest corner of		S.
Chicago	" 2 n. H.	. ı
Seneca street, south side, 290 feet		
east of Chicago	" 2 n. L.	1 S.
Seneca street, south side, 580 feet		
east of Chicago	46 46	1 S.
Seneca street, southwest corner of		
Louisiana	" "	1 S.
Seneca street, north side, 320 feet		
east of Louisiana	" "	1 S.
Seneca street, south side, 640 feet		
east of Louisiana	"	· · I
12		

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Location.	System. Kind	. Hayes.	Ludlow.
Seneca street, south side, 300 feet			
east of Jefferson	R. 2 n.	Ĺ .	ıS.
Seneca street, north side, opposite			
Alabama	"		ıS.
Seneca street, northwest corner of			
Hamburg	"	• •	rS.
Seneca street, southwest corner of			
Jefferson	" "		τS.
Seneca street, northwest corner of			
Swan	" "	••	1 S.
Seneca street, southwest corner of			
Heacock	" "		ıS.
Seventh street, northwest corner of			
Wilkeson	" "	••	ıS.
Seventh street, east side, 310 feet			
north of Wilkeson	" "	• •	ıS.
Seventh street, east side, 310 feet			
north of Georgia	" "		τS.
Seventh street, east side, 310 feet			
north of Carolina	" "	• •	ı S.
Seventh street, southwest corner of			
Virginia	" "		ıS.
Seventh street, west side, 310 feet			
north of Virginia	"		ıS.
Seventh street, east side, 310 feet			
north of Vermont	" 2 n.	Н. 1	S.
South Division, southeast corner of			
Pine	" "	I	• •
Spring street, southwest corner of			
Folsom	" ı n.	Н. 1	• •
Swan street, northwest corner of			
Ellicott	" 2 n.		ıS.
Swan street, south side, opposite Oak.	" "	• •	ı S.

Location.	System. Kind, Hayes, Ludiow.
Swan street, northwest corner of	
Elm	R. 2 n. L I S.
Swan street, southwest corner of	
Michigan	"2 n. H. 1
Swan street, north side, 250 feet east	
of Michigan	" 2 n. L 1 S.
Swan street, south side, opp. Chestnut	" " I S.
Swan street, south side, 200 feet west	
of Chicago	" " I S.
Swan street, north side, opposite	
Pine	" 2 n. H. 1 S.
Swan street, north side, opposite	
South Cedar	" " 1 S.
Sycamore street, northeast corner of	
Elm	" 2 n. L 1 S.
Sycamore street, northeast corner of	
Walnut	" 2 n. H. 1 S.
Terrace, upper, north side, 150 feet	
east of Pearl	" " I S.
Tupper street, southeast corner of	
Virginia	" 2 n. L 1 S.
Utica street, south side, 250 feet east	
of Delaware avenue	Н. " і Я.
Utica street, northeast corner of Oak-	
land avenue	" " ı S.
Utica street, northeast corner of Elm-	
wood avenue	" " ı S.
Van Rensselaer street, west side, 250	
feet north of Porter	R. 2 n. H. 1
Virginia street, southwest corner of	
West avenue	" " ı S.
Washington street, southeast corner	
of Ohio	" 2 n. L 1 S.

Location.	System.	Kind.	Hayes.	Ludlo	w.
Washington street, west side, 250 feet	_				_
north of Ohio	R. 2	n. H	. 1	• •	S.
Washington street, northwest corner					
of Perry	R. 2	n. L.	• • •	I	S.
Washington street, northwest corner					
of Scott	H.	"	• •	I	S.
Washington street, northeast corner					
of South Division	" 2	n. H	. I	• •	
Washington street, northwest corner					
of Eagle	R.	46	I		
Washington street, northeast corner					
of Lafayette	"	"	1		S.
Washington street, east side, 350 feet					
north of Tupper	" I	n. H.	I		
West avenue, east side, 310 feet north					
of Maryland	R. 2	n. L.		I	S.
West avenue, northwest corner of					
Hudson	"	"	• • •	1	S.
West avenue, east side, 300 feet north					
of Jersey	H. 2	n. H.	1		S.
West avenue, southeast corner of					
Porter avenue	" 2	n. L.		I	S.
West avenue, southwest corner of					
Vermont	"	"		I	S.
Red Jacket street, southwest corner		٠			
of Perry	R. 2	n. H.	I		
Whitney place, northeast corner of					
Georgia	" 2 1	ı. L.		I	S.
Whitney place, southeast corner of					
Maryland	"	"		1	S.
Whitney place, east side, 310 feet			•	-	
north of Maryland	"	"		ī	S.
William street, southwest corner of			•	-	
Hickory	**	"		I	S.
				-	

Location. William street, southeast corner of	System	. Kind,	Hayes.	Ludlow.	,
Detroit	R.	2 n. H.	I	••	
William street, south side, 500 ft. east					
of Detroit	"	"	I	••	
Total			77	117	194
H. stands for High Service or Hol	lly Súp	ply.			
R. stands for Reservoir Supply.					
n. H. stands for one nozzle Haye	es		• • • • •		5
2 n. H. stands for two nozzle Haye	es				72
2 n. L. stands for two nozzle Ludle	o ₩				117
S stands for Sewered					160

LIST OF OLD HYDRANTS SEWERED.

Location.	System.	Number.
Carolina street, southwest corner of Seventh	R.	1
Chippewa street, southeast corner of Franklin.	. "	I
Church street, northeast corner of Franklin	"	I
Clinton street, northeast corner of Elm	"	I
Commercial street, northeast corner of Pearl	46	ı
Commercial street, southeast corner of Terrace	"	I
Delaware avenue, northeast corner of Mohawk.	"	I
Delaware avenue, southwest corner of Huron	"	I
Delaware avenue, northeast corner of Chippewa	"	1
Delaware place, north side, 440 feet west of		
Delaware avenue	H.	I
Eagle street, southwest corner of Franklin	R.	I
Edward street, northwest corner of Delaware		
avenue	H.	I
Erie street, northwest corner of Terrace	R.	I
Franklin street, northeast corner of Terrace	"	I
Genesee street, northeast corner of Morgan	"	1

Location. System. N	u mber.
Genesee street, north side, 170 feet east of Del-	
aware avenue R.	I
Georgia street, northeast corner of Sixth "	I
Georgia street, southwest corner of Seventh "	I
Hollister street, northwest corner of Mortimer. "	I
Huron street, southeast corner of Franklin "	I
Irving place, west side, 475 feet north of Allen H.	I
Main street, southeast corner of Exchange R.	I
Main street, west side, 220 feet north of Ex-	
change"	1
Main street, southwest corner of Seneca "	t
Main street, northeast corner of North Division H.	1
Main street, southwest corner of Eagle "	t
Main street, northeast corner of Mohawk "	ı
Main street, east side, 380 feet north of Chip-	•
pewa"	I
Main street, west side, 760 feet north of Chip-	•
pewa	ı
Michigan street, southwest corner of Carroll R.	1
Mohawk street, south side, 120 feet east of Mor-	_
gan	1
Mohawk street, northwest corner of Ellicott	ī
Niagara street, northeast corner of Franklin "	I
Niagara street, east side, 310 feet north of	•
Hudson	I
Niagara street, southwest cor. of Porter avenue "	1
Niagara street, southwest corner of Connecticut H.	I
Niagara street, west side, 310 feet north of Con-	•
necticut"	I
Niagara street, northwest corner of Massachu-	•
	1
	ı
North street, south side, 250 feet east of Dela-	•
	1

THE BUFFALO CITY WATER WORKS.

121

I

•		
Location.	System.	Number.
Washington street, northeast corner of Swan	H.	I
Washington street, southeast corner of South		
Division		I
Washington street, southwest corner of North		
Division	46	1
Washington street, northeast corner of North	"	I
Division	H.	I
Washington street, southeast corner of Eagle	"	I
Washington street, southeast corner of Clinton	"	I
Washington street, southwest corner of Clinton	R.	1
Washington street, northwest cor. of Lafayette	H.	1
Washington street, southeast cor. of Mohawk	"	I
Washington street, northwest cor. of Mohawk	R.	I
Washington street, southeast cor. of Genesee	"	I
Washington street, northwest cor. of Genesee	H.	1
Washington street, southwest cor. of Chippewa	46	1
Washington street, west side, 370 feet north of		
Chippewa	"	1
Washington street, west side, 740 feet north of		
Chippewa	"	ī
Washington street, southeast corner of Tupper	R.	I
Washington street, southwest corner of Tupper	H.	I
Washington street, northeast corner of Goodell	44	1
Washington street, northeast corner of Burton		
alley	"	1
Washington street, southeast corner of Virginia	"	I
Washington street, west side, 300 feet north of		
Virginia	"	I
Washington street, northeast corner of Carlton	"	- I
Washington street, east side, 300 feet north of		-
Carlton	"	I
		4

THE BUFFALO CITY WATER WORKS.		123	
Lecation.	System.	Number.	
Whitney place, west side, 310 feet north of	f,		
Carolina	. R.	I	
Whitney place, northeast corner of Virginia	. "	I	
Whitney place, east side, 310 feet north of	f		
Virginia	. "	I	
Total		96	
I Otal	•	90	
Hydrants Abandoned.			
Location.	System.	Number.	
Exchange, north side, 550 feet east of Wash-	•		
ington	. R.	1	
Exchange, southwest corner of Alabama	"	I	
Main, west side, opposite Ohio	"	I	
Main, southwest corner of Erie	"	1	
Main, east side, opposite Court	"	1	
Ohio, south side, 300 feet east of Michigan	"	I	
Total	•	6	
FREE HYDRANTS.			
Location.	System.	Number.	
Chicago, northwest corner of Mackinaw	R.	I	
Chicago, southeast corner of Elk	"	1	
Chicago, southeast corner of Fulton	. 66	I	
Elk, northeast corner of Columbia	"'	I	
Elk, southeast corner of Moore	"	I	
Elk, southeast corner of Hamburg	"	ī	
Exchange, north side, between Jefferson and			
Hamburgh	"	1	
Exchange, northwest corner of Heacock	"	I	
Fifth, northwest corner of Georgia	"	I	
Fourth, northeast corner of Carolina 18	"	1	

Location.	System.	Number.
Genesee, southeast corner of Spruce:	R.	I
Genesee, southwest corner of Sherman	"	I.
Genesee, northwest corner of Fox	"	I
Louisiana, east side, between Ohio and South	"	I
Louisiana, northeast corner of Sandusky	"	I ~
Mackinaw, southeast corner of Tennessee	"	I
Mackinaw, southwest corner of Vandalia	"	I
Peckham, southwest corner of Watson	46	ī
Perry, southwest corner of Illinois	"	ī
Perry, southeast corner of Hamburg	"	1
Perry, southwest corner of Hayward	"	t i
Scott, southwest corner of Illinois	"	I
Selkirk, east side, between Exchange and Perry	"	I
Sycamore, northwest corner of Spring	" "	I
William, northeast corner of Cedar	"	I
William, southeast corner of Smith	"	I
Total		
Drinking Fountains.		
	System.	Number.
Main, northwest corner of Seneca		1 -
Total		1
Horse Fountains.	•	
	System.	Number.
Broadway, southwest corner of Milnor	R.	I
Genesee, northeast corner of Ellicott		I
Niagara, west side, between Eagle and Franklin	Ŗ.	1
Niagara, northeast corner of Prospect avenue.	"	1
Niagara, northeast corner of Austin (on in		
winter	"	<u> </u>
Total		5

SERVICES.

Total number of Services in the City January 1, 1884, sixteen thousand and twenty-nine, an increase of two thousand six hundred and fifty over previous year.

CORPORATION COCKS.

Statement of Corporation Cocks on hand, received and inserted from January 1, 1883, to January 1, 1884.

	½ Inch.	⅓ Inch.	¾ Inch.	ı Inch.
On hand January 1, 1883	127	80	32	15
Received during 1883	2,614	47	. •	10
-				
Total	2,741	127	32	25
Inserted during 1883	2,621	29	37	
On hand January 1, 1884	632	83	7	26
Number paid for by applicants	2,603	26	37	

CLASSIFICATION OF WATER SUPPLY.

Armories	I
Arsenals	I
Asylums	13
Bakeries	79
Banks	19
Barber Shops	157
Bath Tubs (cold)	367
Bath Tubs (hot and cold)	743
Boarding Houses	152
Breweries	24
Canal Stables	7
Chemical Houses (Fire Department)	5

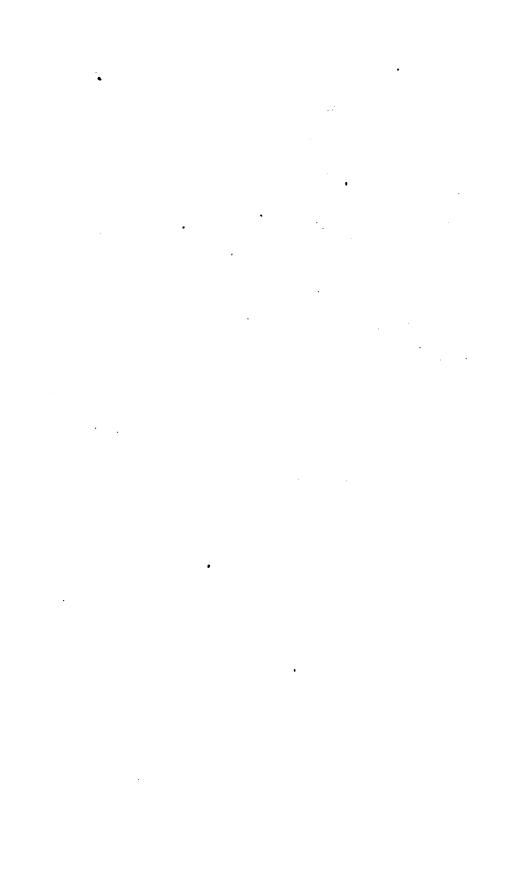
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Churches	38
City and County Hall	1
Confectioneries	72
Custom Houses	1
Distilleries	· 6
Drinking Fountains	3
Drug Stores	67
Dwellings	10,730
Dyeing Establishments	9
Elevators	5
Engraving Establishments	31
Erie County Prison Buildings	2
Families	16,848
Foundries	28
Gas Works	3
Grape Sugar Works	3
Greenhouses	29
Hook and Ladder Truck Houses (Fire Department)	3
Hose Houses (Fire Department)	2
Horse Hydrants	5
Horseshoeing Establishments	26
Hotels	37
Hospitals	6
Laundries	36
Lead Works	1
Liquor Stores	60
Lithographers	4
Livery Stables	43
Manufactories (with engines)	337
Manufactories (without engines)	215
Malt Houses	27
Meat Stores	274
Motors, Beer	146
Motors, Church	12

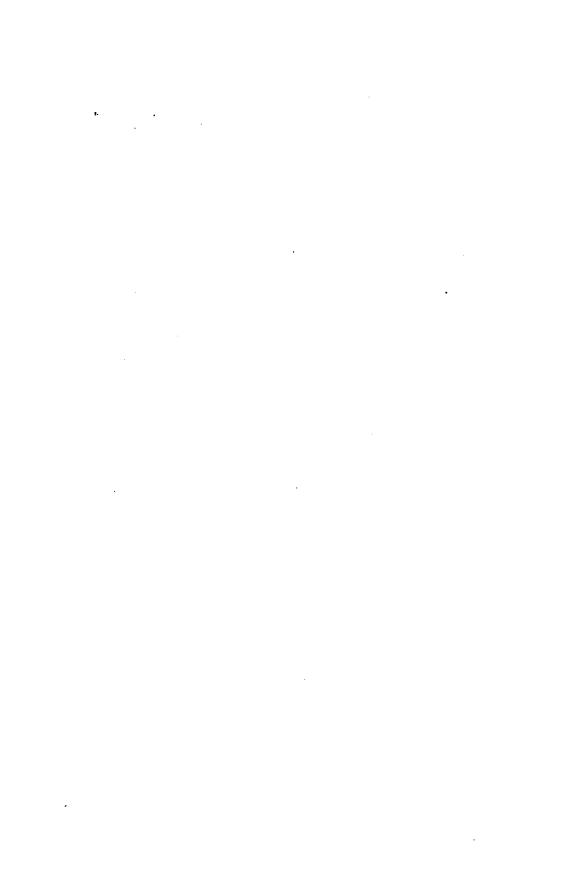
Motors, School	1
Motors, Store	1
Motors, Milk Can	3
Offices	527
Oil Refineries	5
Planing Mills	· 20
Photographing Establishments	29
Police Stations	9
Post Office	I
Potteries	5
Printing Offices	40
Public Markets	3
Public Schools	41
Public Parks	5
Railway Depots	4
Rectifying Establishments	8
Restaurants	18
Saloons	927
Slaughter Houses	58
Stables (private)	1,457
Starch Factories	4
Steam Fire Engine Houses	22
Street Washers and Sprinklers	2,480
Tanneries	15
Theatres	5
Urinals	601
Water Closets	6,109
Premises having supplies on	14,127
Premises having supplies off	1,902
Total supplies, January 1, 1884	16,029
m . •	13,379
Increase for 1883	2,650

•

•



PUMPING DEPARTMENT. 1883.



	Runn	ng Tin	5	_							-				8	II	
	H F	Each Engine i Hours.	ii ii		Days.	Pumping	ping.	.lao		!	ol lo	Water nthly.	Water Sily.	TaleW	Цэдят	ght w	esines E ba
1883.	No. 1.	No. 2.	No. 3-	Total Hour	Days	Мовећју.	Daily.	O gaissioH	Heating.	Lower Engl	House. Total Tons	To sallons of	Callons of Raised D	To anollan	Raised with of Coa	Inches, in B	Duty of E.
anuary	550	_	463	1,530	67			'	v	: 	802.7	809,916,900		351	564 20	_ 4	15,120,000
ebruary	579	672	672	1,923	3 2 3	3 8or.4	28 62		4	<u>:</u>	805.4	777,864,000	0 27,780	857	00 50	m	48,000,000
farch	735	_	26	1,535	63 2				ν,	130	869.4	830,335,000	8	000	563 20	:	15.033,600
pril	. 578	_	72	1,276	53				64	118	696.8	672,954,80	0 22,431,	826		:	16,636,800
fay	579		243	1.323	55			4 13	64		676.2	671,987,40	21,677	012	88 20		47,040,000
une	382.		509	1,226	51			3 13	-	133	682.9	678,508,400	22,616	9	626 20		50,073,60
uly	313	-	577	1.109	46			: œ	:	141	670 6	666,538,100	0. 21,565,7	. 45	33 20		50,640,000
August.	383		385	1,124	462		17.93	3 15	:	141	6.117	704,243,00	22,717,	91	56 IB	*	52,473,60
eptember	305		515	1,207	. 05			8	:	81	721.2	674.336,50	0 22.477.	.883	630 19		50,400,000
ctober	222		744	1,496	62				:	-	760.1	696,657.50	0 22,472,	822	37 20		50.150,00
November	202		720	1,429	59 1		22.76	6 15	:	-:	. 608	657,803,50	0, 21,926,	783	03 20	٠.	48,240,000
ecember	520	82	743	1.443				5	:	811	711.7	725,300,100	0 23.396,	, 111	015 20		49,200,000
Total.	5,348	5,671	5,702,1	6,721	969	7 7.698 9	<u>:</u> 	78	78 19 1,	016	8,811.9	8,568,445.200		• •	1 19	2	
Cotal average.		:		:	:	•	21.0	6	:	:	:		. 23,475,192	561	:		18,584,800
Cotal average \					_								10 386 88c	88			
ast report (: :	<u>-</u>	<u>. </u>	 :	: :	<u>:</u>	: -,	:	:	: - :	<u>:</u> :	: : : :			:	:	:

THE BUFFALO CITY WATER WORKS.

PUMPING DEPARTMENT.

PUMPING ENGINES AND THEIR CAPACITY PER 24 HOURS.

I. Lower House.

Engine	No.	ı,	Worthington	10,000,000	gallons.
••	"	2,	"	15,000,000	"
"	"	3,	"	15,000,000	"
"	"	4,	Shepard	6,000,000	"

II. Upper House (Distributing).

Engine	No.	2,	Holly		6,000,000	gallons
"	46	ı,	"	Reserve	3,000,000	"
Water	pump	ed,	1 8 83		8,568,445,200	gallons.
46	"		1882		7,076,212,870	"

DAILY SUPPLY.

Increase, 1883..... 1,492,232,330 gallons.

The average daily supply for the year 1883 was twenty-three million four hundred and seventy-five thousand one hundred and ninety-two gallons, an increase of two million three hundred and three thousand four hundred and twenty-eight gallons over the previous year. On the following days the greatest and least amounts were pumped:

GREATEST AMOUNTS PUMPED.

Monday, February 5, 1883	33,077,000	gallons.
Tuesday, February 1, 1883	31,784,000	. "
Tuesday, February 8, 1883	31,075,000	"

LEAST AMOUNTS PUMPED.

Sunday, July 1, 1883	16,238,900	gallons.
Sunday, October 14, 1883	16,315,700	"
Sunday, October 28, 1883	16,095,800	44

THE FOLLOWING GIVES NAMES OF ALL REGULAR EMPLOYEES AND THE WAGES PAID EACH ON DEC. 31, 1883.

Board of Water Commissioners.

Board of Water Commissioners.		
James N. Scatcherd, President	er Annum.	Per Day. \$2.00
Louis P. Reichert, Secretary		2.00
James Ryan		2.00
Superintendent.		
Louis H. Knapp	\$2,000	
Registrar.		
John T. Rees	\$1,300	
Cashier.		
Gustavus C. Grimard	\$1,200	
John Scanlon, Clerk	8 0 0	
Charles H. Bieber, Clerk	800	
Charles A. Perry, Clerk	800	
Moritz Koenig, Draughtsman	800	
Adelbert Hosterman, Draughtsman	800	
Edward J. Brady, Locating Hydrants and Valves.		\$2.00
James T. Ryan, Locating Hydrants and Valves		2.00
Garrett W. Doyle, Inspector		2.00
Dennis Ryan, Inspector		2.00
Robert Clarkson, Inspector		2.00

Per Annum.	Per Day.
Andrew Fuller, Inspector	\$2.00
J. Hodge, Inspector	2.00
John C. Mullen, Inspector	2.00
F. Wagner, Inspector	2.00
E. Funk, Inspector	2.00
Patrick Ryan, Tapper	2.50
D. Kelly, Helper	I.75
Store House.	
James J. Collins, Foreman Repairs \$1,000	
James Stratford, Store keeper	
Charles E. Richardson, Time-keeper 800	
George Schneider, Plumber	\$2.00
John L. Fisher, Helper	1.75
Owen Ryan, Hostler	
Samuel Williams, Carpenter	1.75
Jacob Fisher, Teamster	1.75
John Lanahan, Watchman	1.50
J. Pendergrast, Repairer	2.25
Patrick Taughrin, Repairer	1.75
John Higgins, Repairer	1.75
D. Cavany, Repairer	1.75
Patrick Winnehan, Repairer	1.75
Jacob Moest, Repairer	1.75
C. Prichard, Repairer	1.75
F. Kibler, Repairer	1.50
Lower Pump House.	
Patrick Brennan, Engineer in charge \$1,500	
Hugh Cameron, Engineer	
Augustus Hoffman, Engineer900	
Edward Hayes, Fireman	\$2.00
J. Conley, Fireman	2.00

1,000

780

780

\$1.50

1.50

Philip Brown, Engineer.....

James Griffin, Fireman.....

Samuel Victory, Fireman.....

J. Cutler, Laborer.....

J. Tregilgus, Laborer.....



INVENTORY.



INVENTORY.

OFFICE.

- 1 Diebold safe.
- 1 Double desk.
- r Wall desk.
- 3 Low desks.
- 1 Cash counter and desk.
- 1 Public desk.
- 2 Large tables.
- 2 Small tables.
- 1 Letter press and stand.
- 1 Brush and cup.
- 1 Set pigeon holes.
- 1 Drawing table.
- 1 Cabinet.
- τ Model inlet pier.
- 1 Map and case.
- 1 Map and frame.
- 15 Chairs.
- 4 High stools.
- 1 Book stand.
- 10 Cuspadores.
- 1 Mirror.
- 1 Letter scale.
- 1 Webster's dictionary.
- 1 Hektograph.
- 1 Wardrobe.
- r Brush.
- 1 Drop light.
 - 15

- τ Clock.
- 2 Cashier's stamps.
- 2 Register's stamps and pad.
- 2 Superintendent's stamps and pads.
- 2 Letter files.
- 10 Spindles.
- 2 Mucilage stands.
- r Hammer.
- 1 Pair pliers.
- 2 Corkscrews.
- 1 Steel file.
- 14 Inkstands.
- 1 Acid stand.
- 1 Sponge and cup.
- 5 Paper weights.
- 2 Letter openers.
- 5 Brass clips.
- 2 Pen racks.
- 2 Paper cutters.
- 3 Bill holders.
- 1 Shears.
- 2 Book rests.
- 1 Duster.
- 1 Broom.
- 1 Comb and brush.
- 2 Paper tearers.

r Step !	adder.
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I Letter box.

2 Tin boxes.

1 Water gauge.

2 Tin boxes.

3 Cash boxes.

4 Spanners.

r Call bell.

r Paper holder.

2 Match safes.

2 Soap dishes.

2 Drawing boards and horses.

Drawing instruments.

Drawing paper.

3 Maps elevation pump house.

5 Chairs.

r High stool.

2 Inkstands.

5 Turn-off keys.

2 Spoons.

r Pick.

1 City Directory.

5 Bill boxes.

3 Waste paper baskets.

1 Door mat.

2 Water glasses.

2 Paper tearers.

2 Rulers.

13 Pen holder.

6 Towels.

1 Blue pencil holder.

Stationery.

Office books.

1 Thermometer.

2 Tumblers.

1 Cuspadore.

1 Broom.

1 Wash stand.

r Bowl and pitcher.

1 Towel.

1 Foot board.

1 Shovel.

1 Office rail.

I Chest.

1 Water cooler.

1 Hone.

MAIN STORE ROOM.

128 6-inch Eddy valves.

49 4-inch Eddy valves.

2 4-inch Ludlow valves.

4 6-inch Ludlow valves.

4 0-men Budiow valves

5 4-inch Cassen valves.

5 6-inch Cassen valves.

1 12-inch Ludlow valve.

1 12-inch Eddy valve.

1 10-inch Eddy valve.

8 Single shieve blocks for hanging hose, with 50 feet rope to each block.

15 Lengths hose.

1 14-ft. ladder.

1 No. 1 ditch wagon.

1 No. 2 ditch wagon.

1 No. 3 ditch wagon.

1 No. 4 two-wheel wagon.

- 1 16-inch Eddy valve.
- 1 20-inch Eddy valve.
- 3 16-inch Ludlow valves.
- 3 10-inch old Ludlow valves, not much good.
- 6 Ludlow hydrant tops.
- 5 171/2-inch spur wheels.
- 2 6-inch pinions with shafts.
- 5 103/2-inch pinions.
- 5 Large furnaces.
- 3 Small furnaces.
- 5 Large lead pots.
- 3 Small lead pots.
- 8 Large grates.
- 3 Small grates.
- 7 10-inch wood plugs.
- 11 12-inch wood plugs.
 - 2 Pipe scrapers and brushes.
- 2 Pairs 1½-inch blocks with rope.
- 1 Hand sleigh.
- 13/4 Barrels cement.
 - 1 Barrel slacked lime.
 - r Chime Peal stove, old.
 - 2 Tables.
 - 2 Ditch water hand barrows.
 - 6 Coke boxes.
- 14 Wheelbarrows.
- 3 Old oil barrels.
- r Small barrel, half full, tar.
- 3 Pairs skids.
- 9 Wood hydrant boxes.
- 2 Tons of stove coal.
- 1 Trident derrick.

- 2 Iron double shieve blocks.
- 1 Barrel skid. '
- r Pair 1-inch blocks with rope.
- 1 Piece 13/2-inch rope, 40 feet, old.
- I Piece 13/2-inch rope, 20 feet, old.
- 1 Piece 1½-inch rope, 80 feet, good.
- 1 Piece 1 1/2-inch rope, 100 feet, new.
- 1 Piece 11/4-inch rope, 60 feet, old.
- 1 Piece 1 1/4-inch rope, 72 feet, old.
- 1 Sling, 10 feet long.
- 1 Pair patent shieve blocks, 34-in. with 250 ft. rope, new.
- 3 Street carts.
- 1 Hand cart.
- 1 Truck.
- 68 4-inch wood plugs.
- 50 Old iron 6-inch plugs.
- 26 Old iron 4-inch plugs.
- Lbs. tarred rope for gasket.
 - 1 Glass door.
 - 1 Coal scoop.
 - 7 Hand tool boxes.
 - 2 Pairs ice tongs.
 - 2 Ice chisels.
- 2 Galvanized buckets for Inlet Pier.
- 4519 Lbs. tarred rope for gasket.
- 210 Lbs. waste for gasket.

- 3 Geared windlass derricks.
- 100 Bushels coke.
 - 2 Loads clay.
- 36 6-inch wood plugs.
 - 1 Stearns & Marvin safe, contents.
 - 1 Old record book.
- 11 Old day books.
- 9 Old index books.
- 6 Old time books.
- 3/2 Bottle purple ink.
- 1/2 Bottle black ink.
- 1 Battery for blasting.
- r Small book case.
- 1 Pedestal writing desk.
- 1 Writing table.
- 3 Wood seat arm chairs.
- r Cane seat and back chair.
- 1 Letter and bill rack.
- 2 Inkstands.
- 2 Red ink bottles.
- 1 Mucilage bottle.
- 4 Directories, 1875-81-82-83.
- 1 Old 8-day clock, won't go.
- 1 Telephone.
- 1 Heating stove.
- 2 Spittoons.
- 1 Coal scuttle.
- r Waste basket.
- 1 Die stock and two taps.
- 14 Lantern filling stoppers.
 - 1 Double cupboard.

- 4 Old wood water logs, relics
- I Length cement cased with iron water pipe as relic.
- 1 1200-lbs. scales.
- 1 Wash basin on stand.
- 1 Old sword.
- 1 Fire shovel.
- 1 Watering pot.
- 1 Dozen pens.
- 2 Pen racks.
- 2 Paper weights.
- r Ruling pen.
- 2 Rulers.
- 1 Washer cutter.
- 2 Lead pencils.
- 2 Day books, in use.
- 4 File hooks.
- 2 Ditch delivery stub books
- 4 Pen holders.
- ı Eraser.
- 3 Old tape lines, 20, 40, 50 ft
- 4 Bill clamps.
- 21 Large head drawing tacks
 - 1 Feather duster.
 - r File stand.
 - 1 Rubber eraser.
 - 1 Fire alarm gong.
 - 1 Riveting hammer.
 - 1 Time book.
- 11 1-inch Union meter glasses
- 2 10-inch Gem meter glasses
- 24 2-inch Gem meter glasses.

- 12 Short blocks superintendent's report.
- 3 Long blocks superintendent's report.
- 3 Blocks foreman's report.
- 2 Blocks memorandums.
- 8 Blocks card papers.
- 3 Rubber washers for Ludlow hydrants.
- 2 Thermometers.
- 8 Gross 1 1/2-inch wood screws.
- 1 Gross 11/2-inch wood screws.
- 1 Gross 134-inch wood screws.
- 7 Gross 1-inch wood screws.
- 1/2 Gross 3/4-inch wood screws.
- 1 Gross 3-inch wood screws.
- I Gross 21/4-inch wood screws.
- 50 Feet ½-inch rubber tubing for hydrant pumps.
- 9 4-inch Union meter glasses.
- 11 3-inch Union meter glasses.
 - 1 Book rest board.

- 15 4-inch Gem meter glasses.
- 11 2-inch Worthington meter dials.
- 14 2-inch Gem meter dials.
- 6 6-inch Gem meter dials.
- 17 4-inch Union meter dials.
 - 7 6-inch Union meter dials.
- 6 2 inch Union meter dials.
- 20 4-inch three-cornered file
- 1 3-inch rat-tail file.
- 2 4-inch rat-tail files.
- 2 5-inch rat-tail files
- 2 6-inch rat-tail files.
- 2 8-inch rat-tail files.
- 2 g-inch rat-tail files.
- 2 8-inch square files.
- 1 Old 8-inch flat file.
- 1 Stock, 3 taps and dies.
- r City map.
- 2 Requisition blank books.
- 1 Spirit level.
- 1 5-inch flat file.

Tools in J. J. Collins' Wagon.

- 1 Valve key.
- 1 Shovel.
- 2 14-inch flat bastard files.
- 1 S Wrench.
- 1 Pair valve tongs.
- 3 Calking hammers.
- ² Cutting tools.
- 1 12-inch monkey-wrench.
- 1 8-inch monkey-wrench.

- 1 Street key.
- r Oak pail.
- 1 Washer key.
- 1 Packing hook.
- 1 Long spanner.
- 6 Cold chisels.
- 1 Screw-driver.
- 1 15-inch monkey-wrench.
- 1 Riveting hammer.

5 Calking tools. . I Small saw. I Tape line. I Steel bar.

1 Hand-saw file. 1 Hayes hyd't claw-wrench.

1 Cape chisel. 1 Sledge.

r Pine Pail. 2 Crotch hydrant wrenches.

Tools, Etc., in J. J. Collins' Wagon and Street Carts. Cart No. 3.

2 Shovels and 1 steel bar. 1 Pick.

1 Pair tongs. 1 Extension key-wrench.

1 Hydrant cap-key. 4 Crotch keys.

1 Small saw. 1 Riveting hammer.

1 10-inch and 1 8-inch file. 1 8-inch monkey-wrench.

I Gasket iron.
I Calking hammer.
2 Cold chisels.
3 Calking tools.

r Pine water pail.

CART No. 2.

1 Long spanner and 1 short 1 Tee screw-driver.

spanner. 2 Free hydrant keys.

1 Steel bar. 1 Pair tongs.

1 Extension key-wrench. 3 Crotch hydrant wrenches.

4 Calking tools.

2 Calking tools.
1 Small hand-saw.
1 Long spanner.
1 15-inch monkey-wrench.
1 Screw driver.

1 Oil can.

5 Cold chisels.

CART No. 1.

2 Shovels. 2 Picks.
1 40-foot tape line. 1 Valve key.
2 Oil can. 1 Long spanner.

- 1 12-inch monkey-wrench.
- 2 Gasket irons.
- 3 Cold chisels.
- 1 Slide wrench, broken.
- 1 Small saw.
- 1 14-inch bastard file.
- 3 Calking tools.
- 1 Crotch hydrant wrench.

INVENTORY OF STOCK AND FIXTURES IN STORE ROOM No. 1, ON COURT STREET.

- 1/2 Barrel kerosene oil.
- 10 Gals. black oil.
 - r Gal. boiled Linseed oil.
- 12 Lbs. Venetian red.
- 25 Lbs. red lead.
 - 2 Lbs. lamp black.
 - 4 Paint pots.
- 4 Old paint brushes.
- 3 New paint brushes.
- 12 Torches.
- 17 Tubular lanterns.
- 4 Other kinds of lanterns.
- 12 Red globes.
- 24 White globes.
- 1 5-gal. linseed oil can. .
- 1 3-gal. linseed oil can.
- 4 2-gal. kerosene oil cans.
- 1 1-gal. kerosene oil can.
- 2 5-gal. kerosene oil cans.
- 1 3-gal. gasoline can.
- 3 Long copper pipe oiling cans.
- 4 Short tin oiling cans.
- 3 Brass hydrant pumps.
- I Tin barrel pump.
- 12 Pick handles.
- 8 Axe handles.

- 1 Testing rod draw-bar.
- 1 Steel crowbar.
- 3 Ditch spades.
- 4 Tunnels with rubber hose attached.
- 4 Other tunnels.
- 2 1-qt. measures.
- r Filling oil can.
- 5 Lbs. copper wire.
- 3 Lbs. brass wire.
- 12 Lantern stakes.
- 6 New pine pails.
- 4 Old pine pails.
- 5 New oak pails.
- 5 Old oak pails.
- 3½ Boxes soap.
 - 7 Corn brooms.
 - 7 Coca brooms.
 - 3 Scrubbing brushes, corn.
 - 3 Cane brushes.
- 40 Lbs. 6-penny nails.
- 75 Lbs. 10-penny nails.
- 40 Lbs. clinch nails.
- 270 Lbs. 30-penny spikes, cut.
- 75 Lbs. 6-inch spikes, cut.
- 11/2 Kegs 8x3/6-inch boat spikes.

- 16 Drill bars.
 - 4 5/8-inch steel testing rods.
- 3 Hayes hydrant wrenches.
- r Pair nipper tongs.
- 1 New kind free hydrant top.
- 2 Hoes.
- 5 2-inch augers.
- 1 11/2-inch auger.
- 4 Hand-saws.
- 400 Long meter seals.
- 500 Short meter seals.
 - 5 Lbs. tallow and 2-gallon tallow pail.
- 90 Lbs. rubber packing.
 - 9 Pairs strap hinges.
 - 2 Pairs tee hinges.
 - 8 Hinge clasps.
- 4 12-inch Cassen valve stems.
 - 6 10-inch Cassen valve stems.
 - 2 20-inch Cassen valve stems.
 - 2 16-inch Cassen valve stems.
 - 5 6-inch Cassen valve stems.
 - 4 4-inch Cassen valve stems.
 - 4 20 inch Ludlow, old style.
 - 1 24-inch Ludlow, old style.
 - 2 36-inch Ludlow, old style.
 - 6 16-inch Ludlow, old style.
 - 6 12-inch Ludlow, old style.
- 6 10-inch Ludlow, old style.
- 25 Brass hydrant nozzles.
- 10 5 1/2 x 1/4 inch carriage bolts.
- 66 2x₇₈-inch carriage bolts.
- 97 13/4 x 3 inch carriage bolts.
- 100 21/4 x 15 inch tire bolts.

- 25 lbs. 8-penny nails.
 - 1 1-ton Weston chain block.
 - 2 36-in. valve stem nuts, extra.
 - 1 20-inch old Ludlow stem.
 - 4 4-inch Ludlow valve stems.
 - 5 6-inch Ludlow valve stems.
 - 4 Taps, 1/2, 3/4, 1 and 11/4 in.
 - 4 Drills and 4 reamers to match.
 - 1 Pawl ratchet.
 - 1 Pair cutting plyers.
 - 1 Leather punch.
 - 1 Socket wrench.
 - 1 Service wrench.
- 30 Lbs. of scrap leather for pump valves.
- 1/2 Quire sand-paper.
- 1/4 Quire emery cloth.
 - 3 15-inch monkey-wrenches.
 - 1 12-inch monkey-wrench.
 - 2 Lbs. 3/8-inch copper rivets.
 - 2 Lbs. 1/2-inch copper rivets.
- 1 Lb. 3/4-inch copper rivets.
- 4 Lbs. 3/4-inch clout nails.
- 1 Lb. tinned rivets.
- 142 Small staples.
- 40 Hooks.
- 7 Lbs. 1/2-inch washers.
- 32 Lbs. miscellaneous sizes.
- 12 Brass hydrant stem tops.
- 5 3½-inch tin pump valves.
- 8 3-inch tin pump valves.
- 8 Old locks without keys.
- 1 Lb. red chalk.

200 2x inch tire bolts.

100 21/2x1/4-inch tire bolts.

6 1⅓x¾-inch carriage bolts.

9 1 1/4 x 1/2 - inch carriage bolts.

30 2x 1/4 -inch carriage bolts.

4 1x78-inch carriage bolts.

13 13/x1/2-inch carriage bolts.

107 13/4 x 1 inch carriage bolts.

6 3x inch carriage bolts.

42 21/2 x 1/2 - inch carriage bolts.

94 21/4 x 1/4 - inch carriage bolts.

172 21/4 x 18-inch carriage bolts.

93 2x inch carriage bolts.

50 23/4 x 1/4 - inch carriage bolts.

43 3x 1/4 -inch carriage bolts.

17 3 1/2 x 1/4 -inch carriage bolts.

4 434 x 1/4 -inch carriage bolts.

48 4x 16-inch carriage bolts.

30 3 1/2 x 1 inch carriage bolts.

45 43/2 x 1/4 inch carriage bolts.

8 Lbs. iron rivets, black.

to Lbs. 11/2-in. finishing brads.

19 Brass clamps for valves.

36 Brass bolts for valves.

18 S'hooks for hydrant chains.

8 Dozen lamp wicks.

4 File handles.

3 12-inch mill files.

3 14-inch mill files.

4 14-inch mill files.

4 14-inch flat bastard files.

1 10-in. flat recut bastard file.

1 12-inch flat bastard files.

1 Lb. white chalk.

1 Stencil brush and box.

1/2 Stick stove polish.

1 Brass squirt can, new.

4 Old squirt cans.

1 Double cupboard.

1 Hand hatchet.

173%-in. Dies for stamp'g figs.

2 3/4 inch W. W.

1 B. W. W.

22 Torch and can screw tops.

2 Hose couplings.

1 Stove blacking brush.

30 Cold chisels.

31 Cold chisels at pump house to repair.

11 Cape chisels.

20 Cutting tools.

74 Calking tools.

16 Calking hammers.

8 Calking tools with handles.

2 Long cold chisels.

6 Casket irons.

6 Old trowels.

1 Wood mallet.

2 Cooper's hoop drivers.

34 Lbs. Italian hemp packing.

6 Ditch lines.

8 Broken self-closing cocks.

15 Hammer handles.

5 34-in. stop and waste cocks.

1 34-inch stop and lever cock. with lever handle.

- 2 14-inch flat bastard files.
- 3 14-in. half-round bastard files.
- I 12-inch old mill file.
- x 8-inch old mill file.
- 7 4-inch tin pump valves.
- 8 1-inch plugs.
- 632 1/2 inch corporation cocks.
 - 83 5/6-inch corporation cocks.
 - 7 3/4-inch corporation cocks.
 - 26 1-inch corporation cocks.
 - 40 Self-closing faucets.
- 31 Lever handle faucets.
- 50 Feet of pieces 1/2-inch rubber tubing.
- 25 Feet block tin tubing.
- 4 Feet 1-inch lead pipe.
- I Kerosene oil stove, heaters etc., complete for blasting purposes.
- 1 Reel, for leading wire.
- 1 2 gal. tin powder pail.
- 1 Trumpet.
- r Coil leading wire
- 68 Feet fuse.
 - 4 Packages exploders, 50 each.
 - 4 Bunches leading wire.
 - 1 Box for utensils.
- 38 Hayes hydrant caps.
- 15 Brass hyd't caps for faucets.
- 40 Lbs. old lead pipe.
- 12 Bolts 3/4 x4 1/2-inch.
- 11 Bolts 3/x8-inch.
- 14 Bolts 5/8 x8-inch.
- 2 Bolts 3/x16-inch.

- 1 1 1/4-inch lever handle tops cock and waste.
- 29 1/2 inch plugs.
- 21 5/8-inch plugs.
- 18 3/4-inch plugs.
- 305 Lbs. old yokes and eye-bolts Collignon hydrants.
 - 13 Lbs sheet lead.
 - 42 Lbs. old goose-necks and free hydrant keys, staples, etc.
- 120 Miscellaneous bolts, 3/4 to 3/4-inch.
 - 60 1/2-inch tap bolts.
- 24 Cement pipe corporation cocks.
- 3 Branding irons.
- 1 Cleaver.
- 1 Hydrant valve wrench.
- 1 Old book and letter-press.
- 30 Feet halter chain.
- 100 Old hydrant cap chains.
 - 2 Tapping jacks.
 - 3 Pairs tugs.
 - 3 Rachets with handles.
 - 5 Old drinking dippers.
 - 2 Free hydrant drinking cups.
 - 1 Hydrant clamp and chain.
 - 1 12-inch, 2 10-inch iron plugs, used for oil catchers.
 - 4 Panes glass, 11x18-inch.
 - r Tee handle screw-driver.
 - 2 5-inch pinions.
- 1 ro-inch pinions, with shaft
- 13 Pail covers.

- 2 Old brass hydrant pumps.
- 1 Small lead ladle.
- 1 Garden rake.
- 1 Rubber mop, 1 rag mop.
- 515 Meter bolts, 1/2 and 5/6-in. from 2 to 3 inches long.
- 1 %-inch auger bit.
- 2 Old steam gauges.
- 20 Valve stem tops.
- 24 Valve glands.

STOCK AND FIXTURES IN FRONT YARD.

- 22 Lengths 4-inch pipe, average 234 lbs.
- 21 Lengths 6-inch pipe, average 398 lbs.
- 43 Feet of pieces, 6-inch.
- 125 Feet of 4-inch pieces.
 - 1 Length of 20-inch, 1842 lbs.
 - 2 Lengths of 16-inch, 1356— 1404 lbs.
 - 5 Lengths of 10-inch, average 620 lbs.
- 20 Feet pieces of 10-inch.
- 10 Drinking fountains
- 97 7-inch valve boxes, L., average 215 lbs., complete.
 - 4 7-inch valve boxes, short I, average 165 lbs., complete.
- 5 11-inch valves short, average 400 lbs. each.
- 13 Old Hayes hydrants, good order.
 - 1 Ludlow hydrant, good order.
- 2 Hayes double hydrants, no cases.
- 5 3-foot 10-inch valve boxes,

- 2 6-in. single sleeves, 4 sect'l branches.
- 1 36-inch sectional sleeve, 1390 lbs.
- 8 16-inch sectional sleeves, average 360 lbs.
- 2 20-in.sec'l sleeves, av.424 lbs.
- 20-inch sectional branch, 6-inch outlet, 224 lbs.
- 1 16-inch sectional branch, 6-inch outlet, 180 lbs.
- 1 36-inch sectional branch, 6-inch outlet, 800 lbs.
- t 12-inch sectional branch, 6-inch outlet.
- 65 4-inch sleeves, average 46 lbs.
- 29 6-inch sleeves, average 66 lbs.
- 69 6 inch double hubs, average 66 lbs.
- 48 4-inch double hubs, average 53 lbs.
- 16 6-inch meter connections, average 325 lbs.

middles, average 76 lbs., 5 feet middles, average 130 lbs.

- 35 12-inch iron plugs, average 84 lbs.
- 10 12-inch short plugs.
- 37 to-inch long plugs.
- 41 6-inch plugs, average 37 lbs.
- 52 4-inch long plugs, average 20 lbs.
- 7 6-inch short plugs.
- 13 6-inch sectional sleeves, average 121 lbs.
- 9 4-inch sectional sleeves, average 66 lbs.
- 6 Large size 6-inch sleeves, average 97 lbs.
- 5 8-inch sectional sleeves.
- 1 12 to 6 inch reducer.
- 3 8 to 6-inch reducers, average 147 lbs.
- 3 12 to 6-inch short reducers.
- 9 12-inch sleeves, av. 195 lbs.
- 8 16-inch sleeves, av. 285 lbs.
- 35 10-inch double hubs, average 132 lbs.
- 26 12-inch double hubs, average 173 lbs.
- 26 6-in. double, 6-in. branches, average 205 lbs.
- 5 6-in. single, 6-in. branches, average 170 lbs.
- 25 6-inch double,4-in. branches, average 146 lbs.

- 28 4-inch meter connections, average 246 lbs.
 - 3 10-inch offset bends, average 284 lbs.
 - 1 12-inch offset bend, 329 lbs.
- 2 8-inch single, 4-in. branches.
 - 6 12-in. single, 6-in. branches, average 375 lbs.
 - 1 12-in.single,4-in.br'ch,375 lbs
 2 12-in. single, 10 in. branches, average 410 lbs.
 - 1 10-in. double, 10-in. branch 429 lbs.
 - 2 12-inch 1/2 bends, 342 lbs.
 - 7 10-inch 1/4 bends, 304 lbs.
- 4 10-inch 1/8 bends, 220 lbs.
- 4 12-inch 1/8 bends, 242 lbs.
- 4 10x12 inch reducers, 293 lbs.
- 4 10 to 6-inch reducers, 170 lbs.
- 1 6-inch offset bend, average 120 lbs.
- 20 4-inch 1/4 bends, av. 85 lbs.
- 50 4-inch 1/8 bends, av. 76 lbs. 14 3-inch 1/8 bends, av. 55 lbs.
 - 1 36-inch pipe tongs.
 - 1 24-inch pipe tongs.
 - 1 12-inch pipe tongs.
 - 1 10 inch pipe tongs.
 - t Length 36-inch pipe, 5,000 lbs.
 - 12 6-inch 18 bends, average 100 lbs.
- 35 6-inch single,4-in. branches,

- 25 6-inch offset bends, average 129 lbs
 - 6 6 to 4-inch short reducer, average 48 lbs.
- 20 6-inch 1/8 bends, av. 124 lbs.
- 1 4 to 3-inch long reducers,
- 25 6-inch single, 4-inch short branches, all hubs, average
- 6 4-inch single, 4-inch short branches, all hubs, average 120 lbs.

average 189 lbs.

- 18 6-inch 1/4 bends, av. 129 lbs.
- 55 6 to 4-inch offset reducers, average 66 lbs.
- 66 6 to 4-inch long reducers, average 106 lbs.
- 50 4-in. double, 4-in. branches, average 133 lbs.
- 1 4 to 3 inch reducer, 66 lbs.
- 19 4-inch single, 4-inch long branches, average 105 lbs. 16 4-in. offset bends, av. 84 lbs.

BACK YARD.

- 9 3-inch goose-neck bends, old stock.
- 4 4-inch goose-necks.
- 1 4-in. flanged branch, 81 lbs.
- 1 4-in. flange pipe, 34 lbs.
- 30 Old style valve box covers.
- 8 5-foot valve box middles, average 130 lbs.
- 1 36-inch sleeve, 990 lbs.
- 3 20-inch sleeves, av. 590 lbs. 120 Flagging stones.
- 1 10-inch meter strainer.
- 2 20-in. 1/8 bends, av. 132 lbs. 1800 Brick.
- 2 16-inch 1/8 bends.
- 1 16 to 12-inch old reducer and sleeve leaded on it.
- 15 Feet of 16-inch pipe, pieces.
- 3 Lengths of 10-inch pipe.
- 28 Feet of pieces, 10-inch pipe. 150 Hydrant boxes, new.
 - 1 36-inch yoke.
 - 1 Length of 12-inch pipe.

- 4-inch bend with flanges for meters.
- 1 4-in. flanged branch, 122 lbs.
- 3 3-in. flange pipes, 24 lbs. ea.
- 6 6 inch goose-necks, 207 lbs
- 16 Valve box reducers.
- 2 Street boxes, relics.
- 1 Ketcham street box.
- 1 24-inch sleeve, 765 lbs.
- 15 Loads sand.
- - 4 Cords slab wood.
 - 1/4 Cord hard wood.
 - 1 Cogswell fountain.
 - 32 Old hydrants to overhaul and most to be broken up.
- 19 Feet of 8-inch pipe, pieces.
- 106 Feet of 12-inch pipe, pieces.

- 24 3-inch vitrified hub tile, 2 ft. 43 6-inch vitrified hub tile, 2 ft.
 - 5 4-inch vitrified hub tile, 2 ft.
- 39 9-inch vitrified tile, 2 ft. long. 15 15-in. vitrified tile, 2 ft. long.
- long.
- 1 4-inch tile bend.
- 4 4-inch common tile.
- 20 12-in, vitrified tile, 2 ft. long.

TAPPER'S TOOLS.

- 2 Tapping jacks, good.
- 2 Tapping jacks, out of repair.
- 1 6 foot chain.
- 2 3-foot chains.
- 1 5-foot chain
- 1 50-foot tape-line.
- 2 S wrenches.
- 1 Hammer.
- 2 Ratchets for drills, good.
- 3 Ratchets for drills, old.
- 4 Drill sockets.
- 2 Plug drifts.
- 1 10-inch monkey-wrench.
 - 1 Short spanner.
 - 2 Cold chisels.
 - 1 8-inch mill file.
 - 4 Pairs tugs.
 - r Wrench for street box top.

- 17 1/2-inch drills.
- 6 5% inch drills.
- 5 3/4-inch drills.
- 2 1-inch drills.
- 2 3/4-inch plugs.
- 4 5% inch plugs.
- 3 1/2-inch plugs.
- 1 1/2-inch corporation cock.
- 2 5/8 inch corporation cocks.
- 2 3/4-inch corporation cocks.
- r Brass squirt can.
- I Pick.
- 1 Shovel.
- 1 Street key.
- 1 Street spoon.
- I Steel bar.
- 1 35-lb. weight to tie horse.

In Room No. 3.

- 73 Picks.
- 110 Picks at pump house to repair.
 - 52 Pounders.

- 1 Valve gland key.
- 2 3/2-inch socket keys.
- 7 Hose keys.
- 3 Street box spoons.

- 3 Copper hydrant pumps.
- 6 Copper ditch pumps with extensions.
- 8 Galvanized iron pumps.
- 2 Iron pumps with extensions.
- 6 Old brass pump valves.
- 22 Short spanners, old style.
 - 3 Old axes.
 - 3 New axes.
 - 3 Paving hammers.
 - 2 Paving pounders.
 - 1 Sect'l sleeve claw-wrench.
 - 1 Grub hoe.
 - 2 Wood pavement cleavers.
- 1 Force pump.
- 20 Socket valve keys, various sizes.
- 6 Open valve keys.
- 2 Street keys.
- 3 Hydrant stem keys, old style.
- 2 Hydrant calking irons.
- 12 Hydrant fork keys.

- 1 23/2-inch open claw-wrench.
- 3 Valve hooks.
- 8 Large lead ladles.
- 7 Small lead ladles.
- 8 Furnace bars.
- 3 Ring and hook 5%-in. chains.
- 1 Double hook 5/4-inch chain.
- 2 Double claw-hook chains.
- 1 Hook and ring swivel 3/6-in. chain.
- 13 Crowbars.
- 12 Old drill bars.
- 31 Pipe sticks.
- 5 41/2-inch rollers, wood.
- 3 21/2-inch rollers.
- 2 Large sledges.
- 7 Small sledges.
- 1 Pair 36-inch pipe clamps.
- 1 24-inch pipe clamp.
- 1 Old oak pail.
- 1 11/2-ton Wiston chain block.

IN CARPENTERS' SHOP.

- 1 Cupboard.
- I Wash bench.
- r Grindstone and frame.
- 1 Anvil.
- 300 Holly hyd'nt brackets, wood.
 - 3 Round top hy'nt boxes, wood.
- 400 Old Hayes hydrant brackets.
- 600 Feet matched flooring.

- 384 Feet 3-inch pine plank.
- 320 Feet 2-inch pine plank.
- 38 Hemlock 2x4-in. scantlings.
- 135 Hydrant box staves.
- 42 Hydrant box covers.
- 19 Square valve boxes, wood.
- 40 Hydrant box hoops.
- 500 Ft. 1-in. rough boards, pine. 200 Feet 11/2 inch plank.
 - 7 3x4-in, hemlock scantlings.
- 500 Feet hickory and ash plank. 800 Feet 1-inch hemlock boards.

Plumbers' Stock and Fixtures, Tools, Etc., at Store Hou

- 17 1-inch Union meters.
- 18 11/2-inch Union meters.
 - 4 2-inch Union meters.
 - 1 3-inch Union meter.
 - 2 4-inch Union meters.
 - 1 6-inch Union meter.
 - 1 2-inch Gem meter.
 - 1 3-inch Gem meter.
 - 4 4-inch Gem meters.
- 1 6-inch Gem meter.
- 3 1 1/2-in. Worthington meters.
- 3 2-in. Worthington meters.
- 4 2-inch Standard meters, not any good.
- 4 Old meters without names, no good.
- 2 10-inch propeller wheels.
- 1 12-inch monkey-wrench.
- 1 15-inch monkey-wrench.
- 1 20-inch monkey-wrench.
- 2 Socket meter wrenches.
- 1 Extension S wrench.
- 1 Solid S wrench.
- 2 Screw-drivers.
- 2 14-inch flat files.
- 2 14-men nat mes
- 1 8-inch flat file.
- 1 Pair No. 4 tongs.
- 1 Pair No. 5 tongs.
- 1 Set stocks and dies, from ½ to 2 inch.
- I Set stocks and dies, from 1/4 to 1-inch.
- 1 Pipe cutter.

- r Rasp.
- 2 Cape chisels.
- 2 Cold chisels.
- I Flooring chisel.
- 1 Rivet set.
- 1 Solid punch.
- 1 Small gasket iron.
- 2 Soldering irons.
- 1 Pair compasses.
- r Gauge for wood.
- 1 1/2-inch wood chisel.
- 1 Pair small cutting plyers.
- 1 Pair 12-inch gas plyers.
- ı Dresser.
- 1 Ball pin.
- 1 Lead scraper.
- 1 Compass saw.
- 1 Ball plane hammer.
- 1 Pair snips.
- 1 Small hand-saw.
- 1 Seal punch.
- 1 Ladle.
- 1 Mallet.
- 1 Meter key.
- 1 Pair No. 1 tongs.
- 1 Pair No. 2 tongs.
- 2 Pairs No. 3 tongs.
- 21 3/4-inch couplings.
- 22 1/2-inch nipples.
- 32 1-inch nipples.
- 9 1 1/4 -inch nipples.
- -/-
- 33 1 1/2-inch nipples.
- 40 2-inch nipples.

- 1 Quart muriatic acid.
- 1 Small anvil.
- 21/2 Sheets galvanized iron.
 - 1 Pipe vise.
 - I Common vise.
 - 1 Center punch.
 - 1 Pair 6 inch gas plyers.
 - 3 Feet hose for testing meters.
 - 3 Meter keys.
 - 1 Gasoline furnace.
 - 1 Lead pot.
 - 1 Ladle.
 - r Bit brace.
 - 1 Drill brace.
- 17 Bars solder.
- 5 Lbs. of wiping solder.
- 5 4-inch meter strainers.
- 2 6-inch meter strainers.
- 8 10-inch meter strainers.
- 10 1/2-inch couplings.
- 18 1-inch malleable elbows.
- 12 1 1/2 -inch malleable elbows.
- 10 2-inch malleable elbows.
- 13 3 inch tees, cast.
- 10 21/2-inch tees, cast.
- 14 2-inch tees, cast.
- 16 13/2-inch tees, cast.
- 13 11/4-inch tees, cast.
- 16 1-inch tees, cast.
- 16 3/4-inch tees, cast.
- 31 1/2-inch malleable iron tees.
- 37 3% inch malleable iron tees.
 - 1 21/2 inch union.
 - 8 2-inch unions.

- 30 3-inch nipples.
- 6 4-inch nipples.
- 5 7x3-inch flanges.
- 1 91/2 x4-inch flange.
- 1 12x6-inch flange.
- 3 3 to 4-inch meter reducers.
- 2 4 to 2 inch meter reducers.
- τ 6 to 4-inch meter reducer.
- 3 4 inch elbows, cast iron.
- 14 3-inch elbows, cast iron.
- 1 21/2-inch elbow, cast iron.
- 11 2-inch elbows, cast iron.
- 27 11/2-inch elbows, cast iron.
- 14 11/4-inch elbows, cast iron.
- 31 1-inch elbows, cast iron.
- 9 3/4-inch elbows, cast iron.
- 8 ½-inch elbows, cast iron.
- 12 3/6-inch malleable elbows.
- 27 ½ inch malleable elbows.
 - 8 3/4-inch malleable elbows.
 - 2 11/2 x 3/4 inch bushings.
 - 1 3/x3%-inch bushing.
 - 2 2x1-inch bushings.
 - 2 3x2-inch bushings.
 - 1 21/2 x1-inch bushing.
 - 4 11/2 to 1-in. socket reducers.
 - 1 2 to 34-inch socket reducer.
 - 3 3 to 2-inch socket reducers.
 - 1 11/2 to 2-in. socket reducer.
 - 1 11/2 to 1-in. reducing elbow.
 - 1 3/4 to 3/8-in. reducing elbow.
 - 1 3/2 to 1/2-inch reducing elbow.
- 5 11/4 to 1-inch reducing tees,
- 3 11/2 to 11/4-in. reducing tees.

- 7 11/2-inch unions.
- 17 13/4-inch unions.
- 9 1-inch unions.
- 21 34-inch unions.
- 26 1/2-inch unions.
- 3 23/2 x2-inch bushings.
- 3 3x2-inch bushings.
- 1 13/2x3/6-inch bushing.
- 5 3/4 x 1/4 inch bushings.
- 13 2x1 1/2-inch bushings.
- 4 1 1/2 x 1 1/2 inch bushings.
- 3 1x3/4-inch bushings.
- 3 1 1/2-inch plugs, cast iron.
- 3 13/2-inch plugs, cast iron.
- 3 2-inch plugs, cast iron.
- 4 3/4-inch street elbows, malleable.
- 10 1-inch street elbows, malleable.
- , 20 1 1/4 -inch street elbows, malleable.
- 16 13/2-inch street elbows, malleable.
- 10 34-inch street elbows, malleable.
- 11 1-inch street elbows, malleable.
- 13 14-inch street elbows, malleable.
- 12 13/2-inch street elbows, mal
 - z 2-in. street elbow, malleable.
- 11 3/4-inch lock nuts, cast.
 - 7 1/2-inch lock nuts, cast.

- 1 2 to 11/4-inch reducing tee.
- 1 11/4 to 1/2-inch reducing tee.
- 1 11/2 to 11/4 in reducing tee.
- 3 11/4 to 3/4-inch reducing tees.
- 1 11/4-inch cross-tee.
- 8 1 1/4 inch caps, malleable.
- 14 ¼-inch caps, malleable.
- 11 34-inch caps, malleable.
- 11 1-inch caps, malleable.
- 12 1 1/4 -inch caps, malleable.
- 1 13/2-inch cap, malleable.
- 5 1-inch plugs, cast.
- 307 Feet of 1/4-inch wrought iron pipe.
 - 49 Feet of 3%-inch wrought iron pipe.
- 108 Feet of 1/2-inch wrought iron pipe.
- 156 Feet of 3/4-inch wrought iron pipe.
 - 99 Feet of 1-inch wrought iron pipe.
 - 90 Feet of 11/4-inch wrough iron pipe.
 - 98 Feet of 1½-inch wrought iron pipe.
 - 20 Feet of 2-inch wrought iron pipe.
 - 44 Ft. 21/2-in.wrought iron pipe.
- 50 Feet of 3-inch wrought iron pipe.
 - 7 3-inch leather pump suckers.
- r Short spanner.
- 460 Lbs. of old scrap iron pipe.

- 3 Wing elbows, 3/8-inch, malleable.
- 1 2 inch flange elbow, cast.
- 4 Meter couplings 1-inch.
- 6 Union 3-inch meter dials. Ratchet pinions.
- 3 Meter keys.
- 1 Inspector's badge.

IN LOFT.

- 22 Bails straw.
- I Ton marsh hay.
- I Ton timothy hay.
- 75 Bushels oats.
- r Hay cutter.

- 1 Old buggy top.
- r Large oat bin.
- 3 Hay forks.
- r Deep sleigh box.

In Lower Barn.

- 1 Heavy spring wagon.
- 5 Horses.
- r Mule.
- ı Buggy.
- 2 Poor cutters.
- 2 Sleighs.
- 1 Bob sleigh.
- 3 Interfering band pads.
- 1/2 Barrel salt.
- 1 10-inch monkey-wrench.
- 1 Axle wrench.
- 4 Sets harness, good.
- 3 Sets harness, poor.
- 2 Extra breast collars.
- 2 Extra hame collars.
- 1 Martingale.
- 4 Light spring wagons.
- 6 Halters.
- I Single whiffletree.
- 1 Double whiffletree.
- 2 Boxes axle grease.

- 1 Water trough.
- 1 Heating stove.
- 1 Boiler for stove.
- 50 Feet poor hose.
- 15 Feet poor hose.
 - I Coal scuttle.
 - 4 Old horse blankets.
- 7 Good horse blankets.
- 5 Light cotton horse covers.
- 5 Cushions.
- 5 Whips, poor.
- 3 Brooms.
- 1 Coca brush.
- 2 Scrub brushes.
- 3 Stove pokers.
- 2 Stable pails.
- 2 Reflectors.
- 1/2 Lb. castile soap.
 - 1 Pint spirits of nitre.
- 2 Mane brushes.
- 1 Rubber curry-comb.

1	Straw	for	k.
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- 1 Dung fork.
- r Feather duster.
- 3 Boxes salve.
- 1 Surcingle.
- I Cart harness.
- 6 Fly nets.
- 2 Robes, poor.
- 2 Scoops.
- 1 Feed bin.
- 1 Trough for mixing feed.
- r Wagon jack.

- 1 Curry-comb and brush.
- 1 Hair horse brush or duster.
- 1 Chamois skin.
- r Clipping machine.
- 400 Lbs. feed.
 - 2 Clothes-bars for blankets.
 - 1 Step ladder.
 - 2 4-quart measures.
 - 5 Rubber horse covers.
 - 1 Broken whip.
 - 1 Long cobweb broom.
- 36 Axle washers.

IN LEAD ROOM.

- 33 Pigs of lead, 3125 lbs.
- 6 New snow shovels.
- 4 Old snow shovels.
- 6 Ludlow hydrant stems and 28 Lbs. old lead pipe scrap. valves, complete.
- 6 Hayes hydrant stems and 126 Feet new 5/8-inch rope. valves, complete.
- 62 Old hydrant caps, brass.

- 5 Long malleable spanners.
- 219 Lbs. old lead joints.
- 216 Lbs. scrap brass.
- 136 Feet new 1-inch rope.
- - 100 Feet new 3/4-inch rope.
- PIPE IN YARD AT UPPER ENGINE HOUSE.
- 8 Pieces 36-inch pipe, 12 feet long.
- 1 Piece 36-inch pipe, 41/2 feet long, plain.
- 1 Piece 36-inch pipe, 3 feet long, hub.
- 2 Pieces 36-inch pipe, 5 feet long, plain.
- 2 Pieces 24-inch pipe, 8 feet long, plain.
- 1 Piece 30 inch pipe, 12 feet long.
- 1 Piece 30-inch pipe, 43/2 feet long, plain.
- 2 Pieces 20-inch pipe, 23/2 feet long, plain.

- r Piece 36 inch pipe, 4 feet long, plain.
- 1 Piece 36 inch pipe, 3 feet long, plain.
- 4 Pieces 24-inch pipe, 12 feet long.
- 1 20-inch 1/2 bend.

- 1 Piece 20-inch pipe, 2 feet long, plain.
- 1 Piece 16-inch pipe, 23/2 feet long, plain.
- 1 piece 10-inch pipe, 43/2 feet long, plain,
- 2 36-inch sleeves.

UPPER ENGINE HOUSE.

- 1 Rotary engine.
- 1 Geared engine.
- 1 Direct acting engine.
- 1 Knowles steam air-pump.
- 1 Holly feed pump.
- 2 Iron boilers, 6x14 feet, flue and return tubular.
- 4 Steam gauges.
- 2 Vacuum gauges.
- 2 Register gauges.
- 2 12-inch screw-wrenches.
- 1 20-inch screw-wrench.
- 1 Large key.
- 18 Small iron wrenches.
- r 6-inch steam whistle.
- 1 Pair snips.
- 2 Calking tools.
- 6 Drills.
- r Pawl wrench.
- r Nut jack.
- 1 Reamer.
- 3 Flat files.
- 4 Half round files.
- 2 Round files.

- 2 Span steel wrenches.
- 6 Iron socket wrenches.
- 2 Large iron wrenches, twoended.
- 5 Large iron wrenches, oneended.
- 1 Steel hammer.
- 2 Copper hammers.
- 5 Cold chisels.
- 13 Odd chisels.
 - I Vise.
 - 3 Good scoops.
- 2 Old scoops.
- 1 Pair dividers.
- 8 eye-bolts.
- 2 Packing hooks.
- I Tire hoe.
- 3 Flue scrapers.
- 1 Hydrant wrench.
- I Iron coal car.
- 6 Single gas burners in cellar.
- 1 Iron top wheelbarrow.
- 2 Thermometers.
- 1 Ship scraper.

- 6 Old odd files.
- 2 Pairs pipe tongs.
- 3 Steel drift kegs.
- 1 Old anvil.
- 1 Small swivel.
- г Мар.
- 2 Framed regulation cards.
- 1 Map showing elevation from pumping house.
- 1 Log book.
- 1 1/2-gallon oil can.
- 1 1-gallon oil can.
- 2 10-gallon oil cans.
- 1 1-gallon tin pail.
- 2 Spout oil cans.
- 2 Squirt oil cans.
- 1 Quart oil filler.
- 1 50-gallon oil tank.
- 1 Small platform scales.
- 1 Letter box.
- i Iron ladder.
- 3 Wooden ladders.
- 4 Step ladders.
- 2 Snow shovels.
- 1 Oil stone.
- 4 Water drip pans.
- 1 Table.
- 1 Dust pan.
- 4 Water pails.
- 2 Scrub brooms.
- 2 Corn brooms.
- 75 Ft. rubber hose, and nozzle.
 - 1 Reducer.
- 32 Brass stems.

- 4 Hand-lamps.
- 4 Globe lanterns.
- 10 Sheets tin.
 - 1 Marline spike.
 - I Large diamond heating
- stove, No. 36.
- ı Elbow.
 - 1 Zinc for stove.
- 2 New slates.
- 1 Old slate.
- I Clock.
- 1 Ink bottle.
- 3 Spittoons.
- 1 5-inch line, 500 feet long.
- 1 New sea grass_line.
- 1 Good chair.
- 1 Old chair.
- 1 Rubber belt, 54 ft. long, 8 in. wide.
- 22 Lbs. 1-inch round rubber packing.
- 13 Lbs. 1-inch round Empire packing.
- 17 Lbs. 76-inch rubber packing.
 - 4 Lbs. ½-inch square rubber packing.
 - 2 Lbs. 1/4-inch round soapstone packing.
 - 4 Lbs. 34-inch round Empire packing.
- 24 Lbs. 1½-inch square canva, packing.

- 30 Valve seat bolts.
 - 1 Air-pump valve.
- 1 New pair brass boxes, 23 lbs.
- 50 Gallons cylinder oil.
- 12 Gallons machinery oil.
- 20 Lbs. Tallow.
- 10 New rubber valves.
- 31 Rubber valves, faced.
- 25 Old valves.
 - 2 ¼-inch check valves.
 - 1 1/2-inch angle globe valve.
- 19 Extra valve seats.
 - 6 Extra valve weights.
 - 2 Boxes universal metal, Putz pomade.
- 3 New springs for feed pumps.
- 1 9-inch copper gasket.
- 1 Old relief pipe and valve.
- 1 Old wooden wheel, iron rim.
- 475 Feet old 5-inch rope.
- 242 Lbs. old brass.
- 15 Lbs. old copper.
- 300 Lbs. old scrap iron.
 - 6 Lbs. washer leather.
 - 2 Extra hose clamps.
 - David Hood Chainps
 - 1 Soft soap barrel.
 - 8 Lbs. 1/2 and 1/8-inch rivets.
 - 9 Old Tupper grate bars.
 - 29 Lbs. usudorian scrap.
 - 1 Shaft, 23/2 inches in diameter and 14 feet long.
 - 1 Shaft, 2½ inches in diameter and 20 feet long.

- 8 Rubber hand-hole gaskets.
- 4 Lbs. plumbago.
- I Glass water gauge, 15 inches long.
- 1 Pair cross-head gibbs.
- I Iron flue plug.
- 1 Ball cotton twine.
- 3 Old brass faucets.
- 21 Old brass thimbles.
 - 6 5/8: nch bolts 4 inches long.
- 25 3/x1-inch bolts 5½ inches long.
- 1 5-inch blind joint.
- 18 Old oil cup feeders.
- 1 Lubricator, extra.
- 4 Hand-hole plates and crabs.
- 107 Old valve seats.
 - I Pulley, 8-inch face, 4 feet in diameter.
 - 1 Pulley, 8-inch face, 3 feet in diameter.
 - I Pulley, 8-inch face, 2 feet in diameter.
 - 7 Journals for same.
 - I Drum, 2 feet in diameter, 4 feet long.
 - 1 Old leather belt, 8 inches wide, 50 feet long.
 - I Good leather belt, 6 inches wide, 24 feet long.
 - 6 Double gas burners in engine room.
 - 3 Single gas burners in en-

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1 Shaft, 2½ inches in diameter and 11½ feet long.

1 Pulley, 6-inch face, 3 feet in diameter.

gine room.
3 Single gas burners in room.

HOLLY HOUSE SHED.

1 Old Shepard fire-engine, com- 2 Rakes.
plete. 1500 Lbs. soft coal.

21 Feet old suction hose.

50 Feet old leather hose.

12 Feet stone flagging, 3 ft.

12 Feet stone flagging, 3 ft. 200 Brick.

Lower Engine House.

No. 1 Worthington engine, 10,000,000 gals. capacity.

No. 2 Worthington engine, 15,000,000 gals. capacity.

No. 3 Worthington engine, 15,000,000 gals. capacity.

No. 4, Shepard engine, 9,-000,000 gallons capacity.

- 1 Worthington pump boiler feed, 9x16-inch.
- r Worthington pump boiler feed, 6x6-inch.
- I Blake pump boiler feed, 8x 10 inch.
- 1 Blake pump boiler feed, 6x 10-inch.
- 1 Blake pump in cellar No. 1, 10x14 inch.
- 1 Blake pump in cellar No. 2, 14x18 inch.

- 2 Iron boilers, 8x181/2
 flue and return tubula
- I Iron boiler, 9x16 feet and return tubular.
- 3 Cylinder boilers, 53/22 feet, return tubular.
- 1 Hoisting engine, com tox14-inch.
- 1 Whistle.
- 1 Gong.
- I Edison recording and a gauge.
- 16 Steam gauges.
- 5 Water pressure gauges.
- 4 Vacuum gauges.
- 4 Register gauges.
- 2 Stocks, gas dies and 1 ings, 1/4 to 1-inch.
- I Stock and dies, 1/4 to inch.

- 2 Steel boilers, 8x18 feet, flue and return tubular.
- 2 1/2-inch taps.
- 3 3%-inch taps.
- 5 1/2 inch taps.
- 5 3/4-inch taps.
- 5 1-inch taps.
- 2 11/2-inch taps.
- 1 15-inch tap.
- 3 5% inch taps.
- 4 %-inch taps.
- 3 11/8-inch taps.
- 1 Stock plate, 1/2, 5/8, 3/4, 7/8-in.
- 1 Machine reamer, 1-inch.
- 1 Machine reamer, 3/4-inch.
- 4 Small frames.
- 1 Lath chuck.
- 5 Monkey-wrenches.
- 2 Baxter wrenches.
- 3 Chain tong wrenches.
- 18 Single-end wrenches, iron and steel.
- 17 S double-end wrenches, iron and steel.
- 7 Box wrenches, iron and steel.
- 3 Alligator wrenches, iron and steel.
- 7 Double-end wrenches, iron and steel.
- 2 Pairs calipers.
- 1 Pipe vise.
- 2 Bench vises.
- 7 Extension tongs.
- 3 Stilson tongs.
- 18

- I Stock and dies, 1/4 to 2-inch.
- 3 Tap wrenches.
- r Hand reamer.
- 2 Steel hammers.
- 2 Copper hammers.
- 2 Calking hammers.
- 2 Flagging hammers.
- 1 Sledge, 16 lbs.
- 24 Lbs. cold chisels.
- 20 Lbs. calking tools.
 - 7 Flat files.
- 4 Half round files.
- 1 Square file.
- 1 Pair snippers.
- 3 Small breast drills.
- 6 Packing hooks.
- 1 Packing screw.
- 1 Soldering iron.
- 2 Lead ladles.48 Socket wrenches.
 - 7 Socket S wrenches.
 - r Fork wrench.
 - 1 Endless chain fall.
 - 2 Jack-screws.
- 2 Box key wrenches.
- 2 Flue scrapers.
- 5 Fire hoes.
- 2 Slice bars.
- 1 Slice hook.
- 3 Scoops.
- 3 occops.
- 2 Platform scales.
- 1 Counter platform scales.
- 3 Iron wheelbarrows.
- 3 Iron-box wheelbarrows.

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- 3 Pipe tongs.
- 2 Pipe cutters.
- 2 Chisel bars.
- 1 Crowbar.
- 1 Key wrench.
- 1 Drill brace.
- 2 Drill straps.
- 7 Boiler scrapers.
- 2 Ship scrapers.
- 3 Punches.
- r Pair pliers.
- 2 Head-lights.
- 7 Globe lamps.
- 5 Hand lamps.
- 1 Bull's-eye lamp.
- 5 Lamp chimneys.
- 11 Lamp wicks.
- 18 Balls cotton wick.
 - 2 Drinking cups.
- 1 Sprinkling pot.
 - r Gas burner.
 - 3 Hoes.
 - 6 Hand Scrapers.
 - 2 Twist drills.
 - 3 Gasket cutters.
 - o Stamping figures.
 - 1 Universal lath chuck.
- 3 Axes.
 - 5 Augers.
 - 3 Hand-saws.
 - I Cross-cut saw.
 - 1 Adz.
 - 1 2-foot square.
 - I Spirit level.

- 75 Feet 11/4-in. rubber hos good.
- 50 Feet 3-in. rubber hose, ol
 - 1 Hose reel.
- 2 Hose nozzles.
- 2 Cast iron clamps.
- 1 Wrought iron clamp.
- 4 Angle-iron clamps.
 2 Paint brushes.
- I Whitewash brush.
- 1 Soap tank.
- r Case knife.
- 2 Marlinspikes.
- 1 Saw-clamp, wood.
- 2 Mortar hoes.
- 3 Wooden buckets.
- 152 Lbs. 5-inch rope, old.
- 170 Lbs. 4-inch rope, good.
- 90 Lbs. 2-inch rope, old.
 - 80 Lbs. 3-inch rope, old.
 - 174 Lbs. 34-inch chain.
 - 12 Lbs. 1/2-inch chain.
 - 52 Lbs. 5/8-inch chain.
 - 160 Lbs. 1-inch chain.
 - 1 1/2-gallon measure, tin.
 - 1 1/4-gallon measure, tin.
 - 1 1/8-gallon measure, tin.
 - 1 1/4-gallon measure, brass.
 - 2 ¼-gallon measures, co per.
 - 26 Brass drip pans.
 - 1 Brass tray.
 - I Tin tray.
 - 1 Oil tank, 50 gallons.

THE BUFFALO CITY WATER WORKS.

- 1 Brace.
- 4 Bits.
- 2 Screw-drivers.
- 1 Drawing knife.
- 1 Jack plane.
- 2 Oil stones.
- 3 Wood chisels.
- 1 Plumb.
- 2 Trowels.
- 5 Galvanized iron buckets.
- 5 Wooden rollers.
- 2 Step ladders.
- 2 Double scaffold ladders.
- 4 Ladders, 16, 12, 10, and 9-ft. long.
- 2 Sets blocks and tackle.
- 4 Snatch blocks.
- 5 Double blocks.
- 2 Scaffold hangers.
- 5 Rope slings.
- 130 Lbs. 4-inch rope.
 - 1 Tape line.
 - 1 Pair dividers.

- 1 Oil tank, 150 gallons,
- 1 Reservoir and pump,
- 1 Diver's air-pump.
- 1 Diver's chest.
- r Diver's armor, old.
- r Wash sink and bowel,
- 2 Water closets.
- r Urinal.
- 3 Clothes closets.
- 1 Cupboard with drawers.
- 1 Desk cupboard.
- ı Desk.
- 2 Chairs.
- 3 Crown stoves, No. 18.
- 20 Feet 6-inch stove pipe.
- 1 Chart table.
- 2 Double slates.
- 2 Mercury columns.
- 2 Thermometers.
- 2 Levers for Bird Island valve.
- 1 Telephone and battery.
- r Red lantern.

BLACKSMITH SHOP.

- 1 Large lead pot.
- 8 Cast iron ash pit doors.
- 2 Safety ball weights.
- 2 Bushels charcoal.
- 36 Pounds 1/4-inch round iron.
- 64 Pounds %-inch round iron.
- z Stock vise.
- 1 Pair bellows.
- 3 Fullers.

- 1 Anvil.
- 1 Forge.
- 2 Sledges.
- 1 Hammer.
- 2 Cutting tools.
- 3 Pairs tongs.
- 2 Flatters.
- 3 Swedges.
- 2 Empty barrels.

- 2 Setting-down tools.
- 5 Punches and handles
- 1 W. W. Brand.
- 2 Chisels and handles.
- 10 Flat files, old.
 - 4 Square files, old.
 - 2 Half-round files, old.
- 2 Flat files, new.
- 1 Half round file, new.
- 3 Anvil tools.
- 6 Cape chisels.
- 5 Flat chisels.
- I Grindstone.
- 141 Lbs. octagon steel.
- 21 Lbs. 1/6-in. square steel.
- 108 Lbs. 1 1/4 x 1/6 in. steel.
- 500 Lbs. Blosburg coal.
 - 1 Squirt can.
 - 5 Cast iron boiler legs.
 - 5 Gallons kerosene oil.
- 12 Gallons crude oil.
 - 2 Boxes lye.
 - I Corn broom.
- 3 Lbs. soapstone.
- 1 New scoop.
- i Wheelbarrow handle.
- 2 Brasses.
- 2 Unions.
- 2 3/4-inch globe valves.
- 2 1/2 inch globe valves.
- 1 14-inch globe valve.
- 1 15/2 inch check valve.
- 4 Hammer handles.
- 2 Lbs. W. I. nails.

- 1 Old stop wrench.
- 1 Old 3-gallon iron pail.
- 4 Grate legs, 100 lbs.
- 1 5/8-in. chain, 25 lbs.
- 1 1/2-in. chain, 45 lbs.
- 1 3-in. 4-nipple flange.
- 1 Old casting, 100 lbs.
- 1 6-in. pipe plug.
- 1 6 in. pipe sleeve.
- 4 Wooden rollers.
- 6 Window weights.
- 12 Feet of 6-in. pipe, C. I.
- 1 Stop key-wrench.
- 1 Old tin oil tank.
- 3 Plugs, 3, 4 and 9-in.
- 1 23/4 in. C. I. socket wren
- 2 1-in box wrenches.
- 1 2-in. S single-end wrench
- 1 2x3-in. S wrench.
- 1 Iron pot.
- 34 Cords kindling wood.
 - 2 Wire nets.
- 2 Old copper flanges.
- 5 Blind joints.
- r Column gauge.
- 1 Wooden mallet.
- 46 Lbs. rubber valves.
- 5 Lbs. rubber valves for fe pump.
- 2 Lbs. rubber washers.
- 25 Lbs. rubber buffers, new.
- 29 Lbs. rubber buffers, old.
- 12 Lbs. rubber sheet, 2-ply.
- 18 Lbs. rubber sheet, 3-ply.

- 22 Lbs. mineral paint.
- 10 Lbs. red lead.
 - 5 Lbs. glue.
- 12 Sheets emery cloth.
 - 6 Lbs. annealed iron wire.
 - 2 Lbs. copper wire.
 - 3 Old scoops.
- 3 Snow shovels.
- 4 New wheelbarrows.
- 3 New wheelbarrow hubs.
- 4 Maps.
- 2 Valve stems, No. 2 Worthington.
- 16 Sheets tin.
- 4 Lbs. 11/4-in round packing.
- 2 Lbs. 1/2-in. round packing.
- 6 Lbs. 5/8-in. square packing.
- 9 Lbs. 3/8-in. square packing.
- 6 Lbs. 1-in. Eagle packing.
- 11 Lbs. asbestos paper.
- 41/2 Lbs. brass follower bolts.
- 1 100-foot galvanized cable.
- 3 Steam gauge glasses.
- 1 Bbl. salt.
- r Bbl. fire clay.
- 150 Fire brick.
- 30 Lbs. copper.
- 40 Lbs. pig lead.
- 60 Lbs. 8-in. iron flanges.
- 460 Lbs. iron weight, air-pump.
- 232 Lbs. iron valve weights.
 - 2 Street valve stems.
 - 1 16-in. brass valve stem.
 - 1 16-in, iron valve stem.

- 9 Lbs. usudorian.
- 29 Lbs. usudorian scrap.
- 51 Lbs. pump head joints.
- 11 Hand-hole gaskets.
- 20 Lbs. man-hole gaskets.
- 27 Lbs. rubber valves.
- 30 Lbs. hemp packing.
- 80 Lbs. rubber valves.
- 3/2 Bbl. of McCutcheon's compound.
- 1/2 Bbl. English compound.
- 12 Lbs. 11/4-inch Martin pack'g
- 10 Lbs. 76-inch cotton packing.
 - 1 Lb 1/6-inch asbestos pack'g.
 - 5 Carrier bars.
- 3 Carrier tongs.
- 5 Carrier hangers.
- 5 Carrier pulleys.
- 2 Carrier wonden legs.
- 2 Old screen tunnels.
- 2 New screen tunnels.
- I Trap pot, old.
- 1 Set Rogers grates.
- I Tunnel frame and gate.
- 1 36-in. Ludlow valve.
- 3 Rules and regulations.
- 1 Hoist wrench.
- 1 Rice cast iron pipe,6-in.x6 ft.
- 6 Engine clamps.
- 55 Lbs. brass plungers.
 - 2 3-lb. Check valves, old.
 - 6 Lengths 8-in. tile.
- 20 Feet rubber belting.
- 2 Window sashes.

- 11 Wheelbarrows.
- 127 Lbs. scrap bolts.
- 80 Lbs. scrap nuts.
- 10 R. bolts.
- 30 Lbs. hand-hole bolts, old.
- 20 Lbs. hand-hole bolts, crabs.
- 25 Lbs. hand-hole bolts, plates.
 - 1 Boat, scull oar.
- 11 Pieces 7-in. stove-pipe, old.
- 3 Iron endless blocks.
- 1 Portable furnace.
- 16 Grate bars.
- 7 Lengths 6-in. stove-pipe, new.
- 25 Old oil cups.
 - 6 Lbs. borax.
- 116 Lbs. old brass cups.
- 18 Lbs. wrought iron rings.
- 1 Large key drift.
- 2 Screw hooks, 5 feet long.
- 1 1-gallon tin can, old.
- 1 3-gallon tin can, old.
- 1 4-gallon tin can, old.
- 1 5-gallon tin can, old.
- 1 1/2-gallon tin can, old.
- 1 Filler tin can.
- I Tin rat trap.
- I Tin oil-pump.
- 3 Wood blocks for followers.
- 7 Gallons boiled oil.
- 13 Gallons lard oil.
- 34 Gallons cylinder oil.
- 5 Gallons kerosene oil.
- 50 Gas jets.

- 1 Connecting rod.
- r Pulley, 18x8-in.
- 3 Door hangers.
- 1 Cauldron yoke.
- r Pinch bar.
- 2 Bolts 2-in.x12 ft.
- 4 Iron bevel flanges, 13-in.
- 52 Lbs. 11/2-in. square steel.
 - r Engine link.
 - 3 Coal buckets.
- 6 Oil barrels.
- 1 6-in. cast iron flange.
- 2 5-in. cast iron flanges.
- 2 Cast plungers.
- 1000 Lbs. scrap iron.
 - 2 Old stuffing boxes.
 - . 2 Extra walking beams.
 - 1 Extra shaft.
 - 1 Extra valve head.
- I Extra piston, complete.
 - 1 Extra valve chest.
 - I Extra air compresser, com plete.
 - 11 1/2-in. unions.
 - 2 1/2 in. wall ells.
 - 1 1/4-in. valve, old.
 - 38 3/g-in. tees.
 - 18 3/g-in. ells.
 - 1 3/8-in. union.
 - 2 3/8-in. plugs.
 - 5 ½-in. tees.
 - 17 1/2 · in. ells.
 - 11 1/2-in, plugs.
 - 19 3/4-in. sockets.

- 7 3/4-in. ells.
- 4 3/4-inch unions.
- 5 1/2-inch tees.
- 6 34-inch plugs.
- 2 34-inch gam nuts.
- 22 1-inch sockets.
- 2 1-inch oval flanges.
- 1 1-inch ell.
- 2 1-inch tees.
- 1 1x3/4-inch ell.
- 3 1x3/4-inch tees.
- 2 1x1/2-inch tees.
- 3 3-inch short nipples.
- 4 1-inch plugs.
- 1 11/4 x 1/4 inch plug.
- 12 11/2-inch sockets.
- 11 11/4-inch nipples.
- 2 1 1/x 1-inch ells.
- 5 11/2-inch ells.
- 1 11/2-inch tee.
- 1 1 1 x 1 1/2 inch tee.
- 2 11/2-inch flanges.
- 3 1½-inch unions.
- 1 11/2-in return ell.
- 2 1 1/4 inch crosses.
- 6 11/2-inch plugs.
- 2 11/4-inch gam nuts.
- 5 13/2-inch nipples.
- 2 2x3/4-inch tees.
- 1 2x1 1/2-inch tee.
- ----
- 1 2x1 1/2-inch socket.
- 1 2-inch nipple.
- 2 31/2-inch angle ells.
- 2 3x1 1/2 -inch reducers.

- 4 11/2 inch sockets.
- 2 21/2-inch ells.
- 1 136-inch union.
- 2 11/2-inch flanges.
- 2 11/2x1/2-inch reducers.
- 4 11/2-inch plugs.
- 4 11/2 inch tees.
- 1 11/2 x3/6-inch plug.
- 111/2x1/2-inch cap.
- 1 21/2 x 3-inch ell.
- 1 21/2 x3-inch reducer.
- 3 2 1/2-inch ells.
- 4 21/2-inch plugs.
- 1 21/2 x 1/2-inch reducer.
- 4 23/2-inch nipples.
- 4 21/2-inch sockets.
- 1 2-inch reducer.
- 4 23/2-inch sockets.
- 4 21/2-inch plugs.
- 3 21/2-inch ells.
- 2 2 1/2 x 2-inch reducers.
- 3 21/2-inch short nipples.
- 1 2x3/4-inch ell.
- 4 2-inch unions.
- 1 2-inch flange.
- 2 2-inch reducers, in and out.
- 6 2-inch plugs.
- 3 Pieces 6 inch pipe, 18 feet.
- 2 Pieces 1 1/2-inch pipe, 29 feet.
- 3 Pieces 1 1/4 -inch pipe, 29 feet.
- 6 Pieces 3-inch pipe, 30 feet.
- 3 Pieces 34-inch pipe, 28 feet.
- 1 Piece 3/8 inch pipe, 14 feet.

2 3-inch nipples.

2 3x1 1/4 inch tees.

3 3-inch plugs.

1 3x1 1/2-inch reducer.

4 3x2-inch reducers.

1 3-inch tee.

1 3x2½-inch ell.

1 3x2-inch reducer.

14 Pieces 2-inch pipe, 103 feet.

4 Pieces 8-inch pipe, 36 feet.

60 Lbs. rubber scrap.

1 Piece 1/4-inch pipe, 8 feet.

3 Pieces 8-inch pipe, 14 inches.

4 Pieces 3-inch pipe, 4 inches.

1 Piece 6-inch pipe, 4 inches.

2 6-inch caps.

1 5-inch ell.

1 4-inch ell.

1 8-inch plug.

1 4-inch plug valve.

2 5-inch sleeves.

CHAPTER XXXII OF THE ORDINANCES OF THE CITY OF BUFFALO.

OF THE WATER WORKS-IN RELATION TO CONSUMERS.

- § 11. The introduction of service pipe for the supply of premises with water, and all plumbing of every description, must be done by plumbers licensed by the Mayor, and who shall be under bonds to the City for the faithful performance of their work in accordance with the ordinance in relation to plumbing, in connection with the Buffalo City Water Works.
- § 12. All applications for the introduction of water into any premises, or for the extension of any pipe for the conveyance of such water, shall be made in the handwriting of the applicant, and with the written consent of the owner, and must state fully and truly all purposes for which it is required, and when paying the semi-annual charges for it, must frankly and without concealment, answer all questions put to them relating to its consumption.
- § 13. No owner or tenant of any premises supplied with water by the works will be allowed to supply water to other persons or families; if found so doing the supply will be stopped, and the amount of payment forfeited.
- § 14. No addition or alteration whatever, in or about public or private pipe, shall be made by any person, without permission first had in writing from the Superintendent.
- § 15. All lateral or service pipe, for public or private use, shall be of lead or iron, and all necessary fixtures connected therewith shall be subject to the approval of and laid under the supervision of the Superintendent; said pipes, etc., are to be laid and kept in good repair, and protected from frost, by and at the expense of the applicant, who shall likewise pay for tapping the main pipe and the cost of service cock inserted therein, such payments to be made by the person making application for a supply of water at the time such application is made, and where more than one building, or

tenant, is supplied through one service pipe, the application for the supply of such buildings or tenants shall be made by one person, and the bill for the supply of water shall be made to said person, covering all supplies through said service pipe.

- § 16. In case of fraudulent misrepresentation on the part of the applicant, or of uses of the water not embraced in the application or bill, or of willful or unreasonable waste of water, the Commissioners reserve the right to forfeit the payment, and cut off the supply, immediately upon the discovery of such fraudulent use or waste of water, unless the party shall promptly pay such penalty as the Commissioners may impose.
- § 17. Street washers must not be permitted to run to waste, or leak, or be converted into jets, or be used for washing down the collection of the gutters upon the neighboring premises, and no hydrant will be permitted upon the sidewalk, or in the front area, and if standing in a yard or alley attached to any dwelling, will not be permitted to run when not in actual use; taps or sinks, wash basins, water closets, baths, urinals, etc., must be kept closed in like manner.
- § 18. No yard fountain or jet shall be used longer than three hours each day, without a special permit for that purpose from the Superintendent.
- § 19. The Superintendent personally, and any person delegated by him for the purpose, must have free access to all parts of the premises to which the water is delivered, for the purpose of inspection, examination of fixtures, etc.
- § 20. All water bills are payable semi-annually in advance, on the first day of May and November, or within ten days thereafter, and no deduction can be made from any bill for supply of water for street washers, baths, water closets, urinals, or other fixtures for which special rates are paid, unless such fixtures are discontinued or cut off from the supply or service pipe supplying the premises; and if not paid within the prescribed time the water will be

turned off from the premises; and when turned off for non-payment, the sum of one dollar will be added to the bill for renewing the supply. All bills for fractions of regular terms shall be payable in advance for the balance of the term.

- § 21. Notice must be given at the office of the works of any change of occupants in premises supplied with water; and the balance of a bill paid in advance may be transferred on such notice to other premises, but no balance of a bill shall be refunded.
- § 22. Where leaks occur on service pipes, at any point beyond the main pipe, they must be immediately repaired by the owner or occupant of the premises; and if not repaired within a reasonable time after notice, the Superintendent shall cause same to be shut off until repaired, and charge the expense against the premises, to be collected with the first bill for supply of water that shall become due against said premises.

TABLE OF ANNUAL RATES.

DWELLINGS.

Front Width of Building.		Stories in Height.												
	1		1	¥	, 2	1	2	4		•	4		6	•
Under 25 feet	\$ 4	50	\$ 5	40	\$ 7	20	\$ 8	10	\$ 9	<u></u>	\$10	80	\$12	60
From 25 to 30 feet	6	30.	7	8o	9	00	9	90	ΙÓ	80	12	60	14	40
From 30 to 35 feet	8	10	ġ	60	IÓ	80	11	70,	12	60	14	40	16	60
From 35 to 40 feet														
From 40 to 45 feet	12	60	14	40	15	30	16	20	17	10	18	90	20	70
From 45 to 50 feet	15	30	16	80	18	00	18	90	19	80	21	60	23	40

MISCELLANEOUS OR EXTRA RATES.

Dwellings occupied by more than one family subject	
to special rates	•
Bathing tubs, private houses, hot and cold water,	
one tub	\$3 00
Each additional tub	1 8o
Cold water only, one tub	2 40

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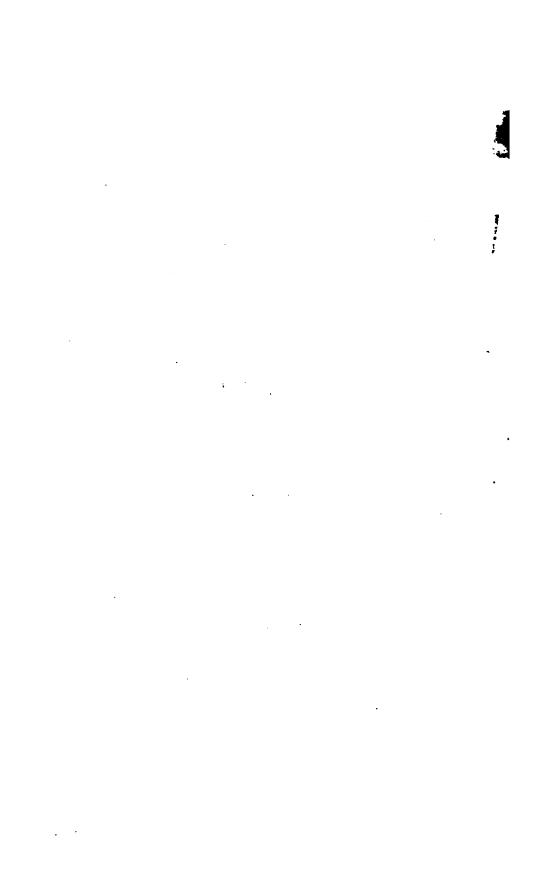
Each additional tub			;	\$1	20
All others	34	00	to	5	34
Stores, other than grocery, provision, liquor, etc	5	34	to	20	00
Grocery, provision, liquor, drug, etc	6	67	to	23	34
Saloons, bars, billiard saloons, restaurants, etc	8	34	to.	43	34
Water closets, private houses, one closet	3	00	to	4	20
Each additional closet	1	50	to	3	00
		00		_	
Water or hopper closets, supplied by ordinary fau-					-
cets or drawcocks, not allowed.				_	
Urinals, from	4	00	and	1 1	up.
Hotels, taverns and boarding houses, subject to special rates.					
Street washers, on sidewalks, under thirty feet					
front of lot				I	80
Corner lots, and up to sixty feet front				_	60
Over sixty feet, subject to special rates.				J	
Urinals, private houses				,	00
When used for gardens or yards, subject to special rates.				3	00
All plain bibs, where hose is attached and hose					
bibs, charged as street washers.					
Stables, private stables, first two stalls, each					
					40
Each additional stall					50
• •					67
Each additional stall				I	00
Stables for cart and other work horses, and for cows, each stall					90
Bakeries, for each barrel of flour used daily, \$3.34					, -
per annum, with additional charge for steam					
engines '					
Printing offices, book binderies, workshops, ware-					•
houses, etc., subject to special rates.					
Building purposes, laying stone, cord					8

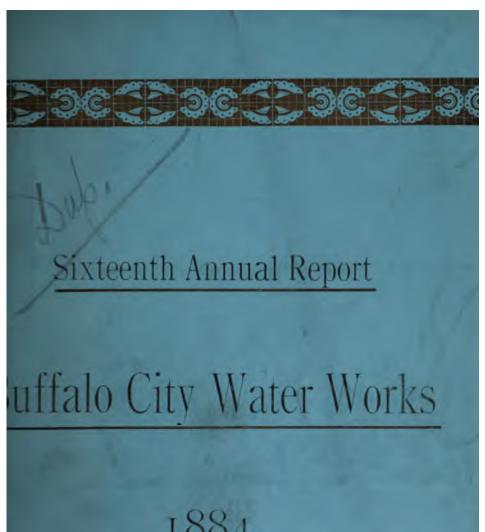
THE BUFFALO CITY WATER WORKS.	175
Brick, per thousand	\$ 5
yards 3 coats plastering, each, per one hundred square	15
yards	20
Steam engine, each horse-power	2 00
With additional charge for manufacturing, use of men, etc., subject to special rates.	
Ambrotype and photograph galleries	34 to 10 00
Breweries, distilleries, rectifiers, etc., subject to special rates, or by meter measurement.	
All supplies not enumerated, subject to special rates.	
Beer motors	15 00
Meter rates to manufactories and railroads, three cents per one thousand gallons.	•
Hydraulic elevators, six cents per one thousand gallons.	

FRONTAGE TAX.

Improved property, ten cents per foot.
Unimproved property, five cents per foot.

The frontage tax on all property taking water is rebated from water bills.

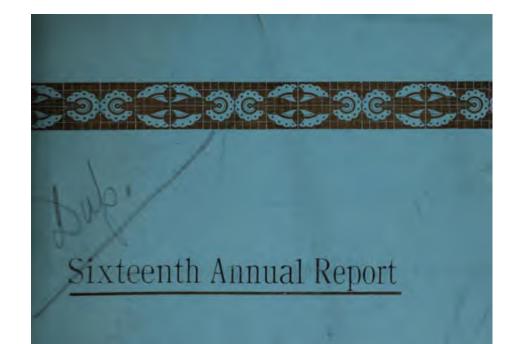




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SIXTEENTH ANNUAL REPORT

OF THE

BUFFALO CITY WATER WORKS

Camplimento of the

Buffalo Water Commissioners.

PLEASE EXCHANGE.

BUFFALO:

HAAS & KLEIN, City Printers, 126 Seneca St.

1884.

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1890

OFFICERS--1884.

Board of Water Commissioners.

LOUIS P. REICHERT, Chairman.

JAMES RYAN, Secretary.

GEORGE W. MILLER.

Superintendent,
LOUIS H. KNAPP,

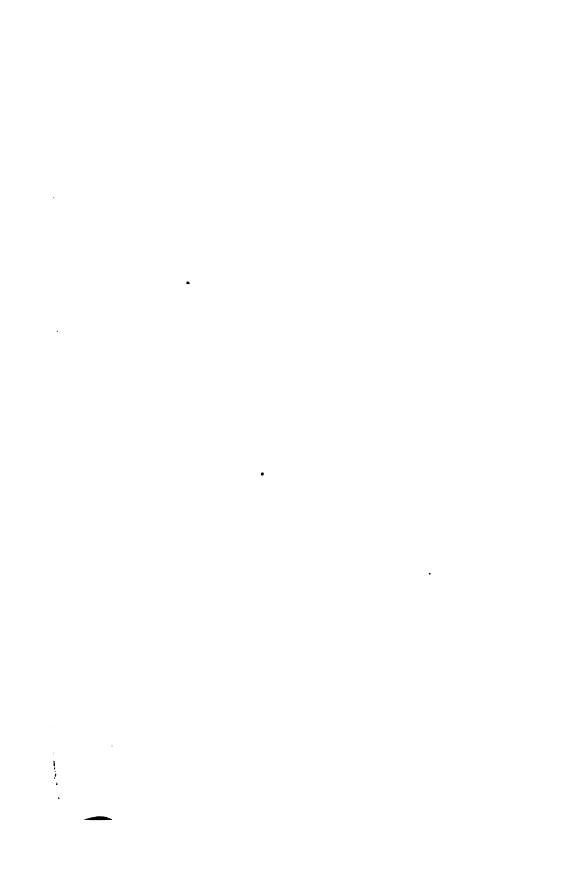
Cashier,

G. C. GRIMARD.

Registrar,
JOHN T. REES.

Clerks.

JOHN SCANLON, CHAS. H. BIEBER, A. HOESTERMANN, ROY CRANDALL.



Commissioners' Report.

To the Honorable the Common Council of the City of Buffalo:

GENTLEMEN: In compliance with title fifteen, section No. ten of the City Charter, we have the honor to herewith submit to you the Sixteenth Annual Report of the Buffalo City Water Works:

Mr. James N. Scatcherd resigned as a member of the Board on the 17th of March last.

The vacancy thus created was filled by Mayor Scoville by the appointment of George W. Miller, Esq.

In the presentation of this report the Board fully realized that to meet the requirements of our rapidly growing city so as to lay mains that all sections can be reached and supplied with Niagara water, the department will of necessity have to expend yearly large sums of money for laying new mains. While the department is fully able to meet the ordinary requirement and outlay for this purpose, in addition to paying running expenses and interest on bonds. We feel that the money to

make extraordinary or special extension, such as to the Poorhouse or Ganson street, where it required large expenditures of money without the department receiving scarcely any revenue, that the money necessary for these purposes should be provided by the City.

There was ordered by your honorable Body of this class of work during the year, four extensions, viz.:

Ganson street, 16-inch main. Jefferson street, 16-inch main. Broadway, 16-inch main. Ferry street, 6-inch main.

To carry out this work, your Honorable Body appropriated \$66,700. These extensions were all made, the cost of which were kept under the amount appropriated.

The total requirement of the department for the year apart from making provisions to paying the bonds falling due was.

Interest on Water Bonds	\$182,101.74 81,078.88 186,623.92
Total	\$449, ⁸ °4.54
	\$449,281.64
Coal and supplies purchased during the year on hand January 1, 1885, which will	
be used in 1885 business	\$33,2 80.16

As will be seen by the above tables the	
department's revenue met all current	
expenses	\$ 81,078.88
Paid interest on bonds	182,101.74
And was able to apply towards the exten-	
sion of new work	119,401.02
Total	\$ 382,581.64

The expense of maintenance and repairs for the year is considerable less than for 1883, although the department has expended large amounts in renewing hydrants and valves. The cost of this work has all been included in the proper accounts, leaving no floating debt standing against the department for supplies or labor.

The works in all its departments are in thorough repair.

No serious breaks or accidents have occurred during the year, and no interruption to the water supply has taken place.

The Fire Hydrants are cared for by this department. We assume full charge and control of them.

A 16-inch main has been completed in Main street to the County Almshouse. This extension cost the department \$25,208.95 during the year. This, with the expense incurred on same extension during the previous year, makes the total cost of this work \$70,720.79.

The expenditure of this sum of money in the more thickly populated parts of the city would bring the department a yearly revenue of \$10,000, or over. The revenue from this extension is less than \$2,600.

The supply at the Almshouse is fully up to our expectations, although upon completion of the new engine it will be greatly improved.

A contract has been entered into between the Board of Supervisors and the Water Board for water for the Poorhouse for a term of three years, the compensation to be two thousand dollars per year.

WATER DEBT.

The water debt has been reduced during the year \$43,500, leaving the amount of debt January 1, 1885, \$2,828,382.

Bonds to the amount of \$91,000, bearing 7 per cent. interest, which became due during the year, have been refunded at a lower rate of interest. This is in accordance with our recommendation of a year ago. There will become due on July 1 next, bonds to the amount of \$100,000.

We would recommend that these bonds be refunded at a lower rate of interest.

KEVENUE.

The total amount received by the Water Department for the year ending December 31, 1884, was \$382,581.64. This is less than for the previous year, owing to the non-collection of the frontage tax.

The estimated loss to the department from this and the balance of rebate of 1883 tax made during May last is \$35,000. There was also a reduction of 10 per cent. in the rates to domestic consumers made May last. This reduction reduced our receipts estimated at \$20,000. This, with previous reduction of 33 1-3 per cent. makes a total reduction of 40 per cent. in domestic rates during the past three years, while rates to manufacturers are lower than in any other city in the United States.

We believe the enforcement of the collection of the frontage tax to be for the best interest of this department and our water takers, as it is the only way of reaching vacant lots and houses not taking water on line of streets where mains are laid; that this class of property should pay for the benefits derived. We would recommend that your Honorable Body direct the assessment of frontage tax as authorized by law.

In consideration of the benefits derived from this tax, we feel sanguine that it will so increase the number of consumers, and thereby our revenues, that we are warranted in recommending a reduction approximating 10 per cent. in rates to domestic consumers, and we do so recommend.

WATER PIPE.

There was laid during the year 14 miles, 2,402 feet of water pipes of various sizes. Of this amount six miles, 2,242 feet was on the high service, and eight miles, 160 feet, on low service supply, making the total amount of pipe laid in the city 164 miles, 2931 feet.

The cost of laying water pipe during the year was 10 per cent. less than during 1883.

There was laid an unusual large quantity of large mains. The use of large mains will of necessity have to be continued.

We now have under contemplation the replacement of nearly all small mains in the central part of the city by larger ones. The present small mains that we propose to replace being a part of the old Water works system as purchased from the original company.

The demand for street mains for the coming year will be greatly increased through the action of the Board of Health in closing wells for sanitary purposes. We expect to lay twenty to twenty-five miles.

DRINKING FOUNTAINS AND HORSE TROUGHS.

The department has met the much needed requirements for public drinking fountains and horse troughs by placing during the year in various parts of the city, three fountains and ten horse troughs. We propose to follow with others during the coming year.

NEW PUMPING ENGINE.

The 15,000,000 gallon Gaskill engine, six boilers, chimney and foundations under contract with the Holly Manufacturing Company, Lockport, is not yet completed, although the work is being pushed as fast as possible, both at Lockport and at engine house. It is now thought the pump will be completed and set up by May next. This pump will be placed at lower pumping house. The old Shepard engine has been sold and removed to make room for it.

New Coal and Boiler House.

During the year the much needed boiler house has been completed. The cost of this building was \$20,-835.53. It can be so arranged that the coal can be received by canal or railroad.

THE ISLAND.

That portion of the city lying south of Buffalo River, known as The Island, now has complete fire protection, a 20-inch steel main having been laid under Buffalo River in July last to connect with the 16-inch main laid in Ganson street.

SERVICES.

There were put in during the year 3,524 taps. This is an increase of 814 over the previous year, the total number on January 1, 1885, being 19,537. This is an increase of 10,432 during the past four years.

DUMPING GROUNDS.

As in our report of last year, we renew our recommendation to have dredging from the harbor and garbage dumped in the river below the Inlet Pier.

The attention of your Honorable Body was called to this serious source of evil during the year 1882, and your Honorable Body immediately took steps to avoid the possibility of the water supply becoming contaminated by ordering all dredging matter dumped in the river below the Inlet Pier, and the same was done until stopped by the United States authorities in July, 1883. since which time the old dumping grounds have been used. During the present winter the water supply has been unusually roily, owing to the open winter, no ice having formed in the harbor or lake so that during storms the wind has clear sweep down or across the lake, stirring up the filth deposited upon the reef or dumping grounds. This roily water is carried by the current much farther into the Niagara River than formerly, owing, as we think, to improvements made in the inner and outer harbor.

The depositing of garbage or dredging matter of any description must be made below the Inlet Pier.

We would recommend that your Honorable Body cause such action to be taken, requesting the members of Congress from this district to get the necessary authority from the Secretary of War as will allow the dumping to be made in the Niagara River below the city's water supply.

If necessary, a law should be passed to this effect at once.

The Board take pleasure in expressing their entire satisfaction and appreciation of the services rendered by the employes of the department. The result of their care, watchfulness and faithfulness to the department's interest is fully shown in reducing expenses in

all branches. For particulars in detail respecting the entire department we refer you to reports and tables furnished by Superintendent and Registrar.

All of which is most respectfully submitted.

LOUIS P. REICHERT,

JAMES RYAN,

GEORGE W. MILLER,

Water Commissioners.

REPORT SUPERINTENDENT 1884.

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			•

January 1, 1885.

To Louis P. Reichert, James Ryan, George W. Miller, Water Commissioners:

GENTLEMEN. I have the honor herewith to present the annual report, showing the operation of the department during the year ending December 31, 1884.

TUNNELS AND INLET PIER.

The time is fast approaching when it will become necessary to increase the size of the shaft at the Inlet Pier and Bird Island Pier; also to remove both of the bulkheads in the tunnel. When this is done, it will nearly double its capacity. When the present pumps are working full, the water in the wells is lowered three feet. When the new pumping engine is completed, it will still further reduce this level. No water has been taken from Bird Island Pier. The entire supply was obtained from the Inlet Pier in the centre of the river.

Engines and Boilers.

All of the Engines and Boilers are in good repair. The new Gaskill Engine is rapidly approaching completion, and when finished will fill a much needed want to the high service supply.

DISTRIBUTION.

There was laid during the year fourteen miles, 2,402 feet of cast iron pipe of various sizes at a cost of \$134,-136.62, of which \$104,875.40 was on the East side and \$29,261.22 on the West side. Of the above three miles 3,459 feet was laid with money provided by special appropriation made by the Common Council. The remainder, ten miles, 4,223 feet, at a cost of \$84,308.69, was paid for out of the revenues of the department.

The total length of pipe laid in the City is one hundred and sixty-four miles, 2,931 feet.

The work of laying the pipe was done the same as last year; the average cost per cubic yard for excavating and refilling was 28 37-100 cts. This is 10 per cent. less than the previous year.

VALVES.

There was placed two hundred and twenty-two valves in the new mains during the year.

HYDRANTS.

There was located on line of new work one hundred and nine hydrants, and reset to replace old ones worn out, one hundred and nine hydrants.

The total number in use is 1,514; all the hydrants used being supplied with a six-inch pipe, and those in the business part of the City are provided with a four-inch opening for fire steamers suction and two 2 1-2 inch openings for hose attachments. The hydrants are all drained by having a 4-inch vitrified tile pipe leading from the waste of the hydrant to the nearest sewer.

Connections with the mains have been made to fifteen fire reservoirs, thus insuring an abundant water supply to these reservoirs for fire purposes in any emergency.

PUMPING.

The total amount of water raised was 8,789,971,200 gallons. This is an average daily consumption of 24,082,112 gallons or 120 gallons daily consumption per

capita, based on the population of the City being 200,000.

METERS.

There are 135 meters in use. The quantity of water supplied through them was 1,576,486,355 gallons. The revenue from which was \$49,467.12. The expense of maintaining the same was \$1,161.78.

SMALL MAINS.

In the territory bounded by Genesee, Exchange, Main and Michigan streets, many of the water mains are too small. Plans have been prepared to improve the supply of this district. The estimated cost of same is \$30,000.00. It provides for replacing all small mains by large ones in all streets running east and west, and 6-inch pipes in connection with these in streets running north and south.

RUNNING EXPENSES.

The amount expended during the year for maintenance and repairs was \$81,078.88. This is \$6,114.65 less than previous year and \$7,686.49 less than the estimated expenses provided for.

Each year demonstrates more plainly the need of the reservoir on the Dodge Farm. When constructed it will supply all the territory east of Jefferson street. The present reservoir can then be made to supply the Black Rock district and its dimensions for that will be ample. The high service can then be reduced to about ten miles; this being constant, no increase of engines will be necessary for that district, but to maintain the present ones.

For the future supply of the City, a plan should be adopted, which will meet the requirements of this rapidly growing City, so that the extensions and improvements made each year will be in conformity to it.

The detail reports will fully explain the operations of the department.

Respectfully submitted,

LOUIS H. KNAPP,

Superintendent.



OPERATIONS

OF THE

REGISTRAR'S DEPARTMENT

FOR

1884.



Office No. 1, City and County Hall, Buffalo, January 1, 1885.

To Louis P. Reichert, James Ryan, Geo. W. Miller, Water Commissioners:

Gentlemen: In compliance with the requirements of your Honorable Body, I have the honor to submit to you the following detailed report of the Water Registrar for the year ending December 31st, 1884. A general inspection was made during the year of all premises on streets where water mains are laid for the purpose of detecting any irregular supplies and the adjustment of rates to water consumers. The result of this inspection shows a net gain to the department of \$4,572.40.

Very Respectfully,

JOHN T. REES,

Registrar.

REVENUE,

The total revenue received from all sources was Following itemized statement shows source of revenue,	
Water for City purposes	\$100,000.00
From Domestic Consumers and Manufacturers not	
metered	208,651.28
From Manufacturers and Railroads metered	48,024.30
From Flushing Sewers	213.27
From Street Sprinkling	1,302.24
From Circuses	25.00
From Street Paving	306.30
From Corporation Cocks	7,081.50
From Turn on Fees	137.00
From Tent on Dodge Farm	727,00
From Builders	1,340.08
*Premium on Water Bonds	5,000.00
	\$372,807.97

SALE OF OLD MATERIAL.

D. Ullman	\$ 6.75
Buffalo Gas Co3,631 lbs. old pipe	30.86
Jas. N. Scatcherd880 lbs. marsh hay and ct'g	4.90
M. Lichtenstein1,008 lbs. scrap iron	5.85
G. B. Hayes26,158 lbs. scrap iron	175.16
Irlbacker & Davis 660 lbs. scrap brass	59.40
S. Williamsold window frames	1.00
John Haigerold Shepard engine	1,209.00
Geo. B. Hayes11,756 lbs. scrap iron	78.72
Geo. B. Hayes15,392 lbs. scrap iron	103.07

^{*} Applicable to reduce bonds only.

A. D. Barber184 ft. curbing	55.20
Geo. B. Hayes11,830 lbs. scrap iron	79.21
W. C. McDonaldold buck board wagon	10.00
Geo. B. Hayes16,912 lbs. scrap iron	113.20
Fries & Co648 lbs. old brass	71.28
Geo. B. Hayes16,110 lbs. scrap iron	107.88
Wm. Horning50 lbs. scrap pipe	1.00
Geo. B. Hayes14,190 lbs. scrap iron	95. 00
M. Lichtenstein380 lbs. waste gasket	1.90
Geo. B. Hayes24,738 lbs. specials	618.45
Cornell Lead Works3,600 lbs. lead skimings	54.00
Cornell Lead Works1,048 lbs. lead skimings	15.72
J. BinzColt	25.00
	\$2,922.55
I ADOD AND SUBDICE	

LABOR AND SUPPLIES.

Am. Glucose Cometer screens	\$ 70.16
F. Arendspanner	1.00
A. L. Barberspanner	1.00
T. Darkspanner	1.00
Folz, Ashman & Cospanner	.85
J. E. McIntirespanner	2.00
Roch. & Pitts. Ry. Co. spanner	2,00
W. H. Glenny S. & Co. laying water pipe from Ter-	
race to warehouse	283.90
Burt & Coextra work on Ganson street	5.50
Crawford Marble Wks.branch	100.00
Capt. Maythamdamage to hydrant	3.20
D. L. & W. R. R. Co., hydrant foot of Main st	78.28
Buffalo Alcholine Wks.4 inch service pipe	201.12
Atlas Refining Colaying branch on Elk st	29.07
Geo. Irr pipe in Avenue A	518.97
C. P. Beckwith & Co. 3 4-in single, 4 branches	9.30

G. Langsranch and meter	284.51
Erie Co. Alms House.supply pipe from Main st	
J. C. Jewett & Sonhydrant	18.09
Buffalo St. R. R. Cochanging valves	64.51
City and County Hall.work in building	11.44
Buffalo Chemical W'ks.laying pipe, Abbott road	871.58
Folz, Ashman & Colabor and use of boilers	748.00
Jubilee Water Workslabor and supplies	74.31
J. L. Schoelkopf service pipe, Abbott road	41.26
James Ryanlabor and material	5.52
S. O. Barnumrepairs to meter	2.00
Jno. T. Noyevalve and box	23.00
Lafayette St. Church branch for motor	118.95
Lee, Holland & Co. pipe laid in Court, Wilkinson	
st's. and yard	445.59
Adam, Meldrum & A.pipe in Express street	280.60
Oppenheimer & Copipe across Terrace	168.52
Jno. C. Gravesbranch for House, Chapin	
Park	114.94
Buffalo Gas Light Co.puddling trenches	25.00
	\$6,849.7

^{\$382,581.64}

WATER BONDS.

Bonds outstanding January 1, 1885, issued for the purchase, extension and improvement of the Water Works.

Date	of	Issue.	Amount. V	When Due.	Date of Issue.	Amount.	When Due.
	 I.	1869	\$100,000 Ju	ly 1, 1885	Sept. 1, 1873 April 1, 1874	\$ 200,000 100,000	
Mar. June	I.	1869 1870 1870 1870	100,000 Ma 100,000 Ju	ar. I, 1887 ne I, 1888	July 1, 1874 Aug. 1, 1874 Oct. 1, 1874 Aug. 1, 1875	100,000 100,000 79,382 100,000	Aug. 1, 1908 Oct. 1, 1908
Jan. Aug.	I,	1871 1871 1871	50,000 Jan 100,000 Jan 50,000 Au	n. 1, 1890 n. 1, 1891 ng. 1, 1891	Jan. 1, 1876 July 1, 1876 Sept. 2, 1878 Apr. 25, 1879	50,000 100,000 50,000	Jan. 1, 1896
July Oct.	I, I,	1872 1872 1872	100,000 Jul 100,000 Oc	ly 1, 1890 t. 1, 1892	Apr. 26, 1880 July 1, 1880 Sept. 1, 1880 Nov. 26, 1880	50,000 100,000	April 26, 1899 July 1, 1904 Sept. 1, 1904 Nov. 26, 1897
Dec.	I, 	1872			Apr. 25, 1881 Apr. 1, 1884 Total	90.000	April 25, 1900 April 1, 1901

INTEREST PAID ON WATER BONDS DURING 1884.

January 14th.	8,750.00
February 18th	13,750.00
March 17th.	34,103.37
April 21st	2,715.00
May 19th	10,500.00
June 16th	22,350.00
July 21st	22,500.00
September 23d	34,153.37
October 20th	1,280.00
November 17th	10,500.00
December 22d	21,500.00
•	

^{\$182,101.74}

COST OF WATER WORKS FROM PURCHASE TO DATE.

Original Purchase	\$ 705,000.00
Dodge Farm	91,861.18
Extensions and Improvements	3,129,081.80
Interest on Bonds	2,632,627.49
Maintenance and Repairs	1,228.444.35
On hand January 1, 1885	96,989.72
Total	\$ 7,884,004,54
RECEIPTS.	
Water Rates	\$3,438,774.69
Bonds	3,028,382.00
Taxes	1,416,847.85
Total	\$7.884.004.54

PRESENT STANDING OF WATER WORKS ACCOUNT.

Original Purchase	\$ 705,000.00
Real Estate, including Taxes	99,136.18
Engines	233,217.05
Holly Pumping House	12,092.25
Holly Pumping Machinery	39,000.00
New Engine House	70,472.00
Gas Well	9,406.44
Inlet Tunnel and Pier	521,823.15
Main Pipes, Branches, Hydrants, etc	2,199,267.70
Coal and Boiler House and Chimney	23,260.53
Gaskill Engine	788,50
Total	\$3,913,463.80

COMPARATIVE STATEMENT.

Revenue received, coal consumed and water pumped annually for fourteen years.

		 :	Coal	<u> </u>	1	P	ipe.	Eac	h Year
Year.	Revenue.	Expenses.		Water Pumped. Gallons.	Extensions.	Miles,	Feet.	Miles.	Feet.
1871	124,865.00	\$ 77,456,95	3,645	2,775,752,490	284,297.84	67	4,644	ļ	
	138,150.00			3,226,891,140	355,492.46	77	2,92	9.	3.557
1873.	168,267.20	77,747.60	4,720	3, 329, 193, 162	308,600.46	81	4,91	4	1,991
1874	176,219.10	66,218.50	2,852.50	3,040,012,107	307,355.64	86	4,90	5 4	5,273
1875	184,516.48	64,862.37	3,422.67	3,828,594,027	159,098.75	91	1,59	(4	1,9 6 6
1876	191,335.84	61,474.22	3,357.88	4,020,936,278	106,900.21	92	4,93	1 1	3,340
1877	189,296.90	57,553.27	3,249	4,267,218,162	17,014.05	93	2,63	ι:	2,980
1878	200, 183.28	55,230.50	3,524.50	4,589,879,986	48,555.32	94	3,37	5¦ I	745
1879	205,415.75	54,497.22	3,979.75	5,291,337,520	11,457.50	97	620	5 2:	2,530
1880	216,214.37	60,083.67	5,800	5,993.009,343.	161,883.89	102	87:	3 5.	247
1881	210,031.46	76,629.cc	7, 192.80	6,344 182,224	201,487.10	114	4,14	12	3,276
1882	362,762.07	79,105.90		7,076,212,870	160,617.81	131	524	16	1,655
1883	426,353.57			8,568,445,200					
1884	381,581.64	81,078,88	9.128	8,789,971,200	186,623.92	164	2,93	[14	2,402

BALANCE SHEET, BUFFALO CITY WATER WORKS, DEC. 31, 1884.

	•	•	• .
2.	Buffalo City Water Works Con-		
	struction	584,382.00	
3.	Buffalo City Water Works Exten-		
	sion Fund	237.737.25	
4.	Bonds Payable		\$2,871,882.00
5.	City Treasurer	170,635.96	
6.	Hydrant and Water Fund		466,567.85
7.	Buffalo City Water Works Exten-		
	sion Loan	2,345,000.00	
17.	Supply Account		29,418.59
20.	Supply Account		267,702.80
26.	Store House	11,209.92	
51.	Fuel	53,877.53	
58.	Salaries	9,561.69	
59.	Engineers, Lower Engine House	3,266.56	
60.	Firemen, Lower Engine House.	4,465.50	
61.	Labor, Lower Engine House	5,583.87	
62.	Engineers, Upper Engine House	2,583.24	
63.	Firemen, Upper Engine House.	1,560.00	
64.	Labor, Upper Engine House	1,104.87'	
66.	Watchmen	300.00	
67.	Pipe Inspector	405.75	
68.	Teamster	563.52	
69.	Tapping	1,435.63	
74.	Office Expenses	1,344.42	
75.	Stationery	295.73	
77.	Pipe and Specials		3,341.76
78.	Advertising	247.57	
79.	Store House Repairs, on Building	560.86	
81.	Upper Engine House, Repairs on		
	Building	131.86	

83.	Lower Engine House, Repairs on	
	Building	\$ 372.37
8 5 .	Supplies, Upper Engine House.	286.78
88.	Inspectors	5,360.00
89.	Repairs, Engine No. 1, Upper Engine House	51.37
91.	Repairs, Engine No. 2, Upper	
•	Engine House	445.45
94.	General Repairs, Machinery Up-	
	per Engine House	108.74
97.	Repairs, Engine No. 1, Lower	
,,	Engine House	229.22
99.	Repairs, Engine No. 2, Lower	-
•	Engine House	174.62
100.	Repairs, Engine No. 3, Lower	65.51
101.	Repairs, Worthington Boilers	
	No. 1, 2 and 3	10.24
102.	Repairs, Marine Boilers Nos. 1,	
	2 and 3	12.03
103.	Repairs, Boilers Nos. 4 and 5	86.54
104.	General Repairs, Machinery Low-	
	er Engine House	183.73
106.	New Tools, Lower Engine House	223.35
108.	Tool Repairs, Lower Eng. House	41.73
112.	Supplies, Lower Engine House	1,054.31
113.	Feed	621.76
116.	Stable Supplies	195.09
117.	Horse Shoeing	118.80
118.	Harness Repairs	155.40
I 20.	Repairs, Wagons and Sleighs	370.08
122.	Wagons and Sleighs Purchased	512.50
123.	Veterinary	34.75
136.	Meter Repairs	1,161.78
140.	Valve Repairs	2,294.85

142.	Repairs, Joint Leaks	\$ 749.83	
146.	New Tools, Store House	563.98	
148.	Repairs, Tools, Store House	97.77	•
150.	Repairs of Bridges	9.35	
152.	Fountains, Free Hydrants and		
	Horse Troughs	1,908.99	
153.	Corporation Cocks and Services.	2,765,75	
155.	New Coal House	20,835.53	
160.	Maps	1,559.01	
176.	General Street Repairs	4,732.39	
179.	Meter Rates		48,024.30
181.	Water Rates		308,651.28
182.	City Treasurer	377,581.64	
191.	Street Sprinkling		1,302.24
192.	Street Paving		306.30
193.	Circus Rates		25.00
197.	Corporation Cocks		7,081.50
198.	Sale of Old Material		2,922.55
199.	Turn on Fees		137.00
200.	Rent of Dodge Farm		727.00
204.	Builders		1,340.08
208.	Gaskill Engine	788.50	
215.	Lead		2,944.62
228.	Hydrant Repairs	7,511.86	
234.	Labor Trench Account		3,025.52
281.	Clifford Street, Smith to Selkirk.	472.13	
282.	Central Avenue, William street		
	Northerly	826.58	
281.	Delavan avenue, Chapin parkway		•
	to Delaware avenue	318.89	
281.	Dodge street, Main street to Elli-		
	cott street	420.59	
282.	Eaton street, Michigan easterly.	400.06	

282.	DeWitt street, Forest avenue	•
	northerly	\$ 343.77
282.	Eighteenth street, Rhode Island	
	to Massachusetts	518.88
282.	Efner street, Georgia northerly	288.74
283.	Front av. Connecticut southerly.	168.69
283.	Goodell alley, Tupper to Goodell	448.70
283.	Hampshire street, easterly across	
	Fargo avenue	159.29
283.	Herman street, Genesee to North	611.71
284.	Howard street, Metcalfe westerly	331.08
284.	Lutheran alley, Broadway to	
	William	705.60
284.	Masten street, Utica to Glenwood	
	avenue	363.97
284.	Michigan street, Balcom northerly	268.26
285.	Massachusetts street, Thirteenth	
	to Fourteenth	342.35
285.	Oneida street, Bond to Smith	599.06
285.	Orlando street, Elk st. southerly.	224,81
285.	Peckham st. Watson to Emslie	320.49
286.	Pratt street, Eagle to Clinton	457.02
286.	Sherman street, Broadway to Syc-	
	amore	1,346 86
286.	Stanton st. William to Howard	620.30
286.	Walter street, Elk to Perry	604.66
287.	Chapin parkway F, for J.C. Graves.	114.94
287.	Broadway, Ellicott to Pratt	11,954.87
287.	Ferry street, Main street to Rich-	
	mond avenue	8,719.14
287.	Main street, Amherst to Erie Co.	
	Alms House	25,280.95
288.	Broadway, Sherman to Smith	3,645.00

288.	Ganson street \$	23,892.57
288.	Ashland avenue, Ferry street	
	southerly and northerly	568. 89
289.	Best street, Masten to 250 ft. east	
	of Michigan	473.5 I
289.	Boston alley, Burton alley to	
	Virginia	308.91
289.	Bouck ave. West av. to DeWitt	460.16
289.	Davis street, Genesee to Jefferson	505.31
290.	Elk street, Babcock to 500 feet	
	easterly	534.80
290.	Fulton street, Hamburgh to L.	
	S. & M. S. R. R	767.22
290.	Herman street, Broadway to end	
	of pipe	1,141.75
291.	Henry street, Lower Terrace to	1
	Erie Canal	369.77
291.	Hampshire street, Fargo avenue	
	to Plymouth avenue	761.25
291.	Hamburgh st., Elk to Fulton	312.32
291.	Johnson street, Genesee to North	1,131.13
292.	Nineteenth street, from end of	
	pipe to Massachusetts	212.96
292.	Sherman street, Genesee to North	990.86
292.	Sycamore street, Grey to Johnson	365.68
292.	Seventeenth street, Vermont to	
	324 feet southerly	295.73
293.	St. John's Place, Wadsworth st.,	
	225 feet Westerly	193.99
293.	West ave., York to Connecticut.	595.74
293.	Masten street, Ferry street to 950	
	feet northerly	912.14
294.	Danforth street, Forest avenue	
	to Bradley	753-44

294.	Broadway, Sherman to Fillmore		
	avenue	\$ 7	,354.79
294.	Upper Terrace, Eagle to 400 ft.		
	southerly		354.10
295.	Elmwood avenue, Hodge avenue		
	to Utica		187.34
295.	Erie street, from end of pipe to		
	Buffalo River		61.68
295.	Randall street, from William to		
	200 feet south		135.30
296.	Utica street, from Elmwood to		
	Ashland aves		193.51
2 96.	Chicago street, from Seneca 100		
	feet northerly		80.46
323.	Service Leaks		375.70
324.	Reservoir		887.56
324.	Chimney, new Gaskill Engine	2	,425.00
375.	Repairs, Fire Steamer		257.78
3 25 .	Blacksmith Shop		907.48
327.	Repairs, Engineer's House		133.44
327.	Sewer Commissioners		717.88
328.	Hostler		605.00
32 9.	Street Reservoirs		520.97
329.	Bell Waterphone		500.00
11.	Horses Purchased		625.00
2.	Bird Island Pier Valve		884.26
4.	Repairs, Barn, Lower Eng. House		14.13
15.	Repairs, Dodge Farm		160.50
6.	Old Repair Account		207.40
8.	Repair, Feed Pumps, Lower Eng.		
į	House		142.37
19.	Inlet Pier		78.63
.0.	Freight and Express		72.96

341.	James N. Scatcherd	\$	108.00
341.	Louis P. Reichert		630.00
341.	James Ryan		630.00
342.	Rent of Bell Telephone		143.86
3 42 .	Traveling Expenses		25.00
343.	George W. Miller		166.00
379.	Main street, Delavan avenue to		
	Rail Road Crossing	2	,000.00
38o.	Express street		280.60
381.	Court & Wilkeson & Mill Yard		467.84
381.	Ferry street, Richmond avenue		
	to Hibbard street	3	,384.42
381.	Bryant street, Richmond avenue		
	to 84 feet easterly		67.46
382.	Chapin Parkway, Soldiers' Place		
	to Delavan avenue	I	,109.67
382.	Carroll street, Van Rensselaer to		
	Heacock		393.92
382.	Delaware avenue, Ferry street to		
	Chapin Place		677.46
383 .	Dodge st., Michigan to Ellicott		757.02
383 .	Fargo avenue, Massachusetts to		
	School		393.22
3 83.	Fourteenth st., Vermont to Rhode		
	Island		685.5 0
383 .	Grape street, North to Best		516.38
384 .	Thirteenth street, York street		
	southerly		151.66
384 .	Jefferson street, Best to Ferry	10	,596.07
3 85.	Laurel street, Michigan to Masten		636.93
385.	Maple street, Carlton to High		557.31
3 85.	Mohawk street, Niagara 150 feet		
	westerly		174.68

Miama street, Alabama to Ham-		
burgh	\$	325.34
Nineteenth street, Rhode Island		
street, northerly		375.51
Pearl street, Lower Terrace to		
Glenny's warehouse		279.40
Riley street, Masten to Michigan		1,056.29
Seventh street, Rhode Island to		
Massachusetts		693.66
Terrace, foot of Franklin to		
Evans		261.27
Terrace, across Terrace to Mann-		
ing's Malt House		192.12
Thirteenth street, Vermont to		
Rhode Island		5 4 8 08
Vermont street, at Bremen, Sev-		
enteenth and Brayton		126,16
Wilkeson street, Sixth to Court		747.22
Fourteenth street, Massachusetts		
to Hampshire		596.63
Balcom street, Main to Michigan		150.09
Berlin street, High to Best		1,066.93
Butler street, at Elmwood, Ash-		
land and Howard avenues		472.15
Brayton street, Vermont to Rhode		
Island		523.98
Barker street, at Linwood avenue		35.11
Bundy's alley, Sycamore street		
northerly		295.71
Chenango street, Rhode Island		
to Utica		395.87
Buffalo Street R. R. Co		94.77
George Martin		29.97
	burgh Nineteenth street, Rhode Island street, northerly Pearl street, Lower Terrace to Glenny's warehouse Riley street, Masten to Michigan Seventh street, Rhode Island to Massachusetts Terrace, foot of Franklin to Evans Terrace, across Terrace to Manning's Malt House Thirteenth street, Vermont to Rhode Island Vermont street, at Bremen, Seventeenth and Brayton Wilkeson street, Sixth to Court Fourteenth street, Massachusetts to Hampshire Balcom street, Main to Michigan Berlin street, High to Best Butler street, at Elmwood, Ashland and Howard avenues Brayton street, Vermont to Rhode Island Barker street, at Linwood avenue Bundy's alley, Sycamore street northerly Chenango street, Rhode Island to Utica Buffalo Street R. R. Co	Nineteenth street, Rhode Island street, northerly

44	SIXTEENTH ANNUAL 1	REPORT OF	
393.	Folz, Ashman & Co	\$ 362.75	
393.	A. Schaefer	63.00	
363.	N. Y., W. S. & B. R. R. Co	63.96	
398.	M. Scanlon	15.50	
399.	Adam Hastman	147.44	
400.	Hardwicke & Ware	34.41	
190.	Flushing sewers		\$ 213.27
196.	Labor and supplies		1,730.75
	·	\$ 4,017,344.41	\$4,017,344.41
BALA	ANCE SHEET, BUFFALO CITY WATE	r Works, Jan	UARY 1, 1885.
2.	Buffalo City Water Works Con-		
	struction	\$584,382.00	
3.	Buffalo City Water Works Exten-		
	sion Fund	402,300.18	
4.	Bonds Payable		\$2,828,382.00
5.	City Treasurer	96,989.72	
6.	Hydrant and Water Fund		642,789.90
7.	Buffalo City Water Works Exten-		
	sion Loan	2,387,500.00	
	-	\$2 AZI IZI 00	

\$3,471,171.90 \$3,471,171.90

SCHEDULE OF BILLS AND ACCOUNTS

APPROVED DURING THE YEAR 1884 BY THE WATER BOARD AND PAID BY THE CITY TREASURER.

1884.	Improvements and Extensions.	
Jan'y. 14,	G. C. Grimard, Cash'r Wages week ending Jan.	
	I 2	18.00
Jan'y. 21,	Buffalo Gas Light Co Relaying gas mains	13.23
"	Vosburgh & BakerSundries	18.56
Jan'y. 28,	Bell Waterphone CoUse of waterphone	250.00
"	G. C. Grimard, Cash'r. Pay roll, January	2,385.97
Feb. 18,	S. D. ColieShingles	30.45
**	Weed & Co Axes and helves	4.40
"	John C. PostSundries	4.80
66	Felthousen & RussellLabor and material	6.00
44	E. G. FelthousenSundries	8.63
46	F. F. Silbert bob sleigh	60.00
44	Geo. W. ShawSundries	26.70
• •	G. C. Grimard, Cash'r Weekly pay roll	119.44
Feb. 25,	B. CunninghamExcavating Main street.	1,500.00
"	G. C. Grimard, Cash'r. Weekly pay roll	133.50
46	G. C. Grimard, Cash'r. Feb. pay roll	2,192.81
Mar. 3,	Ludlow Valve Mfg. Co. 1 set of bevel gearing for	
	20" valve	9.25
Mar. 10,	Hurd & HauensteinLumber	13.63
"	J. N. MatthewsAd. prop. sale of engine.	10.00
"	Ludlow Valve Mfg. Co.50 hydrants and frost	
	cases	1,537.50
Mar. 31,	Telegraph Pub, CoAd. prop. cast iron pipe.	12.60
"	Engineers News Pub.	
	Co. (N. Y.)Chimney and foundation.	5.40
"	Buffalo Evening News. Pub. prop. for C. I. pipe.	11.00
"	Buffalo Evening News. Pub. prop. excavating	7.50

Mar. 31,	Fred FlemingStriping and lettering	
	bulletin board	\$ 2.00
"	Powell & Plimpton Liniment blueing etc	.35
"	Lee, Smith & MooreCoal	4.50
6.6	John C. Post Oil (boiled.)	6.50
"	Fries & Co Rep. and corp. cocks	00.1
"	C. J. HamiltonLumber and cartage	2862
64	John C. Post Boiled oil and ven. red	4.00
44	Young, Lockwood & Co. Stationery	26.68
"	G. C. Grimard, Cash'r Pay roll, March	1,408.22
"	G. C. Grimard, Cash'r Weekly pay roll ending	
	March 31	96.26
April 7,	G. C. Grimard, Cash'r Weekly pay roll ending	
	April 5	175.80
April 14,	Scott & NealLivery	4.00
"	Howard Iron Works 1 5" swivel vise	19.50
"	The Courier CoCopy daily Courier and	
	adv	22.66
"	Buffalo Evening News. Ad. sale Shepard engine.	11.25
"	Hammond & GuildRep. clock and rep. steel	
	tape	1.50
"	Buffalo Gas Light CoCoke	4 00
"	Williamsville Lime Co.Cement	10.00
"	Lee, Smith & MooreCoal	4.25
"	Cornell Lead CoLead	2,212.60
44	$W.\ C.\ McDonald.\ \dots.R\ e\ m\ o\ v\ i\ n\ g\ earth\ for$	
	buildings at lower	
	pump house	460.00
April 21,	Felthousen & Russell Labor and material	10.53
46	Farrar & Trefts Labor and material	.70
"	J. D. WarrenAd. prop. cast iron pipe,	
	excavating, sale of old	
	engine	18.75

♣ pril 21,	S. ChamberlainWagon repairs	202.74
66	G. C. Grimard, Cash'r Roll for 2 weeks, ending	
	April 19th	239 01
66	Irlbacker & Davis Sundries	57.59
"	Pratt & CoSundries	211.42
16	Geo. B. HayesCast iron pipes	1,548.31
46	Geo. B. HayesCast iron pipes	854.79
April 21,	G. B. HayesSundries	946.79
April 28,	S. S. Jewett & CoStove grate	.56
"	E. H. Butler Pub. prop. for excavating	7.50
"	G. C. Grimard, Cash'r . Pay roll, April	1,258.08
"	B. CunninghamMain St. Ex. trench	1,500.00
"	W. J. McDonaldRemoving earth for	
	buildings at lower en-	
	gine house	427.00
"	G. C. Grimard, Cash'r. Exc. Trenches ending	
	April 26, 1884	541.95
May 5,	Ferry boat "Niagara".2 trips to inlet pier	9.80
"	James BolandLabor and material,	14.28
"	Norman E. MackAdvertising	14.64
44	W. J. McDonald Hauling cinders	25.00
"	Reinecke & Zesch Printing and advertising	30.75
46	W. J. McDonaldTeaming and labor	15.75
• •	Adams, Moulton & Co. Lumber	109.65
44	James BolandBuilding blacksmith shop	
	gen, rep. to walls	283.65
44	Geo. B. Hayes, No. 6. Cast iron pipe	3,664.89
4.	Geo. B. Hayes, No. 8. Cast iron pipe	2,465.87
"	Geo. B. Hayes, No. 9. Special castings	160 06
"	G. C. Grimard, Cash'r. Weekly pay roll	564.50
May 12,	Fries & CoCorporation cocks	369.00
"	F. S. Pease & Co53½ galls. W. W. oil	7.92
44	Buffalo Gas Light Co Coke and cartage	8.84

May 12,	, W. J. McDonaldTeaming and labor	\$ 34.38
44	C. W. HollowaySand	7.50
66	Howard Iron WorksLabor and material	751.79
44	W. J. McDonaldRemoving earth for new buildings at lower en-	
46	gine house	400.00
••	P. G. Straub Excavating trench Main	
	St., Erie R. R., and	
46	Alms House	600.00
••	B. Cunningham Excavating trench on	
	Main St., bet. Del. Ave.	
"		1,200.00
	Louis H. Knapp, Supt. Two horses	500.00
"	G. C. Grimard, Cash'r. Weekly pay roll ending	•
	May 10, excavating	
	trench	514.98
• •	G. C. Grimard, Cash'r. Roll week ending May 17	613.59
	James BolandRepairing	228.04
"	Lee Smith & MooreCoal	10.20
"	H. H. Brown Labor and material	15.55
. 44	Eddy Valve CoValves	723.00
"	H. G. TroutLabor and material	34.93
• •	H. G. TroutLabor and material	233.30
"	Pratt & CoSundries	109.17
"		2,584.28
• •	G. B. Hayes, No. 11 Special casting	24.48
44	• •	3,912.43
**	G. B. Hayes, No. 13 Special castings	232.55
"	G. B. Hayes, No. 15 Special castings	70.51
44	• •	4,065.83
"	B. Cunningham Excavating trench Main	
	bet. Delavan ave. and	
	E. R. R	2,500 00

1 a y 26,	G. C. Grimard, Cash'r. Pay roll May, 1884\$	1,333.02
• 6	G. C. Grimard, Cash'r. Roll week ending May 24	510.35
• 6	P. G. Straub Excavating trench Main	
	St., bet. Erie crossing	
	and Alms House	1,000:00
une 2,	G. C. Grimard, Cash'r. Roll ending May 31	819.81
**	James BolandBuilding new coal house	
	and repairing wall	500.00
"	Pratt & Letchworth57½ lbs. malleable iron.	5 75
"	Jas. BourgmanCharcoal	1.50
"	Buffalo Gas Light CoCoke	13.33
44	James D. WarrenAd. for excavating, and	
	coal	10.00
June 9.	Engineers News Pub-	
	lishing CoAd. for bids for boilers,	
	engines, etc	5.40
"	J. L. Mott Iron Works,	
	New YorkDrinking fountains	172.50
"	Weed & CoSundries	7.80
"	J. C. PostSundries	6.48
"	C. J. HamiltonPlank door frame	2.25
"	Goodyear Rubber CoSundries	66.98
44	Howard Iron Co Hydrants, labor, &c	1,739.45
44	Geo. B. Hayes No. 7 Special castings	187.54
"	" " "Cast iron pipe	4,483.08
46	" " "Spec. castings	83.14
"	" " "Cast iron pipe	5,000.29
"	G. C. Grimard, Cash'r. Roll week ending June 7.	1,028.83
• •	W. C. McDonaldRemoving earth for build-	
	ings, L. Eng. House	600.00
"	P. G. StraubExcavating Trench Main	
	st. Erie R. R. to Alms	
	House	700.00

June	9,	G. C. Grimard, Cash'r. Roll week ending June 14.	973.55
June	23,	W. C. McDonaldTeaming and labor	72.63
•	"	Eddy Valve Co2-10 in. and 1-6 in. Cl.	
		4 valves	84.15
	"	Eddy Valve Co2-10 in. and 2-16 in. Cl.	
		4 valves	220,00
	"	T. G. Johnson500 brass checks	10.00
	"	Hurd & HauensteinLumber	21.21
	"	Eddy Valve Co1-36 in. Cl. 4 valve	650 00
	"	James BourgmanCharcoal	1.80
•	"	Telegraph Pub. CoAdvertising	5.85
•	• •	J. C. Champion Mechanical boiler cl'n'r	6 00
	"	The Eddy Valve Co4-16 in. and 1-12 in. Cl.	
		4 valves	356.00
•	"	Felthousen & RusselNew tools, &c	19.13
	"	James Boland Labor and material	104.59
,	"	James BolandRep. store house, &c	113.15
1	"	James BolandRepaving	630.00
	"	Pratt & CoSundries	32.54
	"	Geo. B. Hayes Special castings	317.15
	"	Geo. B. HayesCast iron pipe	5,112.13
	• 6	Geo. B. HayesSpecial castings	125.19
•	• •		3,225.03
•	• •	Geo. B. Hayes Special castings	314.27
	• •	G. C. Grimard, Cash'r Pay roll, week ending	
		•	1,107.07
June	30,	R. G. DrullerdCarting fountains	10.00
	"	Brady & MaltbyStone foundations	168.75
	• 6	M. RiterIron, laddles, etc	28.70
•	••	Thos. RobinsonLumber	87.02
	"	Geo. B. HayesSpecial castings	50.68
		•	4.877.58
	٠.	G. C. Grimard, Cash'r Pay roll June, 1884	1,536.16

June 30, G. C. Grimard, Cash'r. Pay roll week endin	g
June 28, 1884	.\$1,096.85
" P. G. StraubExcavating on Main st	•,
bet'w. N. Y., L. E. & W	7.
R. R. and Almshouse	. 2,000.00
" B. CunninghamExcavation on Main st	•••
bet'w. Delavan ave.	&
N. Y. & W. R. R	. 1,700.00
July 7, Lee, Smith & MooreOne ton Blossburg coal	4.25
" Charles SuorPine plugs	. 42.36
" Eddy Valve Co3-16 in. Cl. valves	
" Eddy Valve CoFoot valves & strainers	. 235.50
" J. N. MatthewsAdvertising	. 38.75
" A. R. KetchumValve boxes	. 182.25
" Adams, Moulton & Co. Lumber	. 1.71
July 7, Howard Iron Works Hydrants and castings.	. 386.52
" Louis H. KnappSundry advances	. 16.45
" Bingham & Morgan Valve boxes, etc	. 373.57
" Geo. B. HayesCast iron pipe	. 4,442.96
" Geo. B. HayesSpecial castings	207.05
July 14, R. E. AndrewsSundries	. 7.00
" A. R. Ketcham Valve boxes	. 76.42
" W. H. H. Newman & Co. Pig lead	. 240.35
" Fries & CoCorporation cocks	197.51
" Buffalo Lub. Oil CoOil	5.58
" C. J. HamiltonStaves	. 192.00
" G. C. Grimard, Cash'r Weekly roll July 12	. 1,179.84
" P. G. StraubEx. trench Main Street	·,
N. Y. L. E. & W. R. R.	.,
to Erie Co. Alms House	e 1,000.00
" S. D. ColieLumber	. 1 го.69
" Geo. B. HayesCast iron pipes	. 3,408.59
" Geo. B. Hayes Special casting	. 499.11

July	23,	James BolandBuilding coal house and		
		repairing walls\$1		
July	7,	James Boland Same		
	"	W. C. McDonaldRemoving earth from		
		above 1		
	"	G. C. Grimard, Cash'r. Weekly roll lab. ending		
		July 5		
July	21,	Eddy Valve Co3-16 in. Cl. 4 valves		
	"	Eddy Valve Co50-6 in. Cl. 4 valves		
	"	Felthousen & RusselSundries		
	**	John LythSundries		
	44	G. B. Hayes Cast iron pipes 4		
	"	G. C. Grimard, Cash'r. Weekly roll lab. ending		
		July 19, 1884 1		
	**	M. E. BeebeDrawings for new coal		
		house		
	"	A. AdomyOld lead		
	46	W. C. McDonaldRemoving dirt for foun-		
		dation of new engine.		
	"	Scott & BakerLivery hire		
	**	A. R. KetchamValve boxes		
	"	Geo. B. HayesSpecial castings		
	"	Geo. B. Hayes3		
	"	Geo. B. HayesSpecial castings,		
	**	W. C. McDonald Excavating earth for new		
		coal house		
	"	P. G. StraubExcavating on Main St.		
		bet. Erie R. R. and		
		Alms House		
July	28,	G. C. Grimard, Cash'r Pay roll July 1884 1		
	"	G. C. Grimard, Cash'r Fund to pay wages, lab-		
		orers during vacation		
		"Common Council." 6		

■ ly 28	, G. C. Grimard, Cash'r. Wages, laborers w'k end-
	ing July 26, 1884\$1,058.85
Lug. 4	, James BolandRepaving 207.26
"	James BolandRepairs 19.39
"	James BolandNew coal shed 1,118.00
**	James BolandDrinking fountain 94.24
46	James BolandDrinking fountain 71.12
"	A. R. KetchamValve boxes 119.22
**	D. UllmanRope 145.30
44	James BolandIn full of contracts 2,222.22
44	N. Y. C & H. R. R. R.
	Co Freight 22.00
**	B. Cunningham Excavating rock on B'w. 1,000.00
"	J. L. MottDrinking fountains 535.10
"	Fries & CoSundries 403.86
**	G. C. Grimard, Cash'r. Excavating, week end-
	ing Aug. 2 1,052.08
Sept. I,	D. R. & H. Fogelsonger. Cut stone for coal shed. 258.00
64	J. W. Trimms' SonsTarred Rigging 210.90
• 6	C. W. HollowaySand
"	Weed & Co4 kegs 30 nails 10.00
"	Jas. Bourgman 12 bu. charcoal 1.80
• 6	Hurd & HauensteinHemlock 34.10
44	Brady & MaltbyLabor and material 24.35
"	Williamsville Lime Co. Cement and lime 6.00
"	Howard Iron Works Hydrants, etc 2,420.95
"	Farrar & TreftsWrought iron pipe for
	Ganson st., supply 2,457.69
"	Hingston & Wood Dredging and laying pipe
	across Buffalo river 1,500.00
**	B. Cunningham Excavating Rock on
66	B. Cunningham Excavating Rock on Broadway bet. Smith
66	•

Sep	t. 1	, P. Hickler Launching and sinking	
		pipe in Buffalo R., etc.	\$1,500.00
	46	G. B. HayesSpecial casting	207.16
	"	G. B. Hayes Cast iron pipe	1,879.72
	"	G. B. HayesCast iron pipe	1,902.13
	"	G. B. HayesSpecial casting	65.10
	"	G. B. HayesCast iron pipe	1,569.99
	"	G. B. HayesSpecial casting	159.23
	"	G. B. HayesSpecial casting	355.48
	66	G. B. HayesCast iron pipe	1,055.50
	"	G. B. Hayes Special casting	152.31
	"	G. B. HayesCast iron pipe	1,098 89
	4.6	G. C. Grimard, Cash'r. Pay roll, August	1,289.09
	"	James BolandBldg. new coal house	2,000.00
	"	P. G. Straub Excavating trench on	
		Main st., bet. Erie R.	
		R. and Alms House	150.00
Sept	. 22	, P. Hickler Repairs to inlets, old and	
		new tunnels	785 00
	"	B. CunninghamExcavating rock on	
		Broadway bet. Smith	
		and Sherman	1,100.00
	"	P. HicklerLaunching and sinking	
		pipe in Buff. river, etc	75.00
Sept.		, G. C. Grimard, Cash'r. Pay roll, September	1,458.22
	"	Jos. Churchyard Constructing roof for	
		new coal house	1,500.00
	"	James BolandRepaving	1,055.54
Oct.		Jno, C. PostSundries	12.40
	"	The Eddy Valve Co2 10" cl. 4 valves	63.00
	"	Jno. C. PostSundries	4.20
	"	Ulbrich & KingsleySundries	30.45
	"	T. Conboy	51.41

Oct.		4, Niagara Bridge Works. Constructing water pipe	
		bridge	620.00
Oct.		6, F. Willians & Co ton Blossburgh coal	4.25
	"	Louis A. Walker Tamarack poles	16.00
	"	Jno. Gisel 10 hitching posts	15.00
	64	C. H. KelloggSundries	41.65
	"	H. G. TroutSundries	3 5 ·45
	66	Hammond & GuildNickel marine clock	3.50
	"	C. Suor Pine plugs	19.00
	"	Jas. BourgmanCharcoal	1.80
	"	James D. WarrenPrinting	48.00
	"	Fries & Co Corporation cocks	386.40
	"	Powell & PlimptonSundries	3.08
	"	S. D. ColieLumber	15.36
	"	S. D. ColieLumber	54.25
	"	G. B. HayesCast iron pipes	1,017.61
	44	G. B. HayesSpecial castings	44.66
	"	G. B. HayesSpecial castings	58.12
	44	G. B. HayesCast iron pipe	188.83
	"	James BolandMason work	33.72
	"	James BolandMason work	55.75
	44	John LythVit pipe, etc	112.82
	64	Farrar & TreftsLabor and material	58.33
	"	Bingham & MorganValve boxes	201.45
	"	Howard Iron WorksHydrants, etc	2,936.10
	"	Pratt & CoSundries	126.97
	"	Jos. ChurchyardBulkhead new coal house	576.59
	"	G. C. Grimard, Cash'r. Weekly pay roll	52.63
	"	C. E. Walbridge Banners and lanterns	21.60
	46	W. C. McDonaldFilling foot of Columbia	
		st., for W. pipe across	
		Buffalo river	51.00
	"	F. S. PeaseOil	6.00

Oct.	6,	Howard H. Baker & Co. Manilla rope	12.75
	"	Buffalo Gas Light Co Coke and cartage	20.00
	"	Buffalo Gas Light Co Coke and cartage	24.00
	"	Irlbacker & DavisMerchandise	131.03
	44	F. Williams & Co ton Blos. coal	4.25
	"	B. CunninghamFinal payment excava-	
		ting Broadway bet.	
		Sherman and Smith	45.00
	"	James BolandNew coal house	3,000.00
	"	Jos. ChurchyardConstructing roof for	
		new coal house	2,000.00
	"	G. C. Grimard, Cash'r. Weekly pay roll	42.75
Oct.	20,	National Meter CoMeter repairs	189.37
	"	D. McNaughtonSundries	209.13
	"	D. McNaughtonSundries	90.50
	44	H. H. Baker & Co Manilla rope	4.16
	"	Geo. B. HayesWater pipe	498.90
	"	Geo. B. Hayes Special casting	39.72
	• 6	Geo. B. HayesWater pipe	529.29
	• 6	Geo. B. HayesSpecial casting	27.50
	•6	Geo. B. HayesSpecial casting	17.02
	••	Geo. B. HayesWater pipe	76.03
	"	Geo. B. HayesSpecial casting	43.87
	"	Geo. B. HayesWater pipe	83.15
	"	G. C. Grimard, Cash'r. Weekly pay roll, Oct. 18.	28.50
Oct.	27,	G. C. Grimard, Cash'r. Weekly pay roll, Oct. 25.	26.75
	"	· · · · · · · · · · · · · · · · · · ·	1,274.14
Nov.	10,	Bingham & MorganSundries	10.62
	"	Fries & CoCorp. cocks	389.90
Nov.	10,	Hand & JohnsonServices of tug	1 2.00
	••	Jos. BourgmanCharcoal	1.80
	••	Ulbrich & KingsleySundries	10.00
	••	Hurd & HauensteinLumber	31.30

Nov. 10,	Wm'sville Quick Lime	
	CoCement	\$ 5.00
"	Cornell Lead WorksLead pipes and solder	37.94
••	James Boland Final payment, erecting	
	new coal house	174 00
44	Jos. ChurchyardFinal payment, erecting	
	timbered roof to new	
	coal house	91.97
**	G. C. Grimard, Cash'r Weekly pay roll Nov	44.06
Nov. 17,	Farrar & TreftsLabor and material	1,016.05
**	Young, Lockwood & Co. Sundries	16.85
• •	D. UllmanJunk	233.20
44	C. J. HamiltonLumber	35.73
"	Jos. Churchyard Planking for bulkhead at	
	coal house, L. P. H	12.48
"	Bingham & MorganValve boxes	338.75
66	Machwirth Bro'sConstructing roof on new	
	coal house	600.00
"	G. C. Grimard, Cash'r, . Weekly roll Nov. 15	28.50
"	G. C. Grimard, Cash'r. P. O. Stamps	25.00
"	James BolandConstructing chimney at	
	lower pump house	2,425.00
Nov. 24,	G. C. Grimard, Cash'r. Weekly roll Nov. 22	285.88
46	G. C. Grimard, Cash'rRoll Nov. 1884	1,258.30
Dec. 1,	Sheeler & Sons Frames for lower engine	
	house	39 00
44	Eddy Valve Co1-3 in. Cl. 4 valve	8.25
"	G. C. Grimard, Cash'r. Weekly pay roll Nov. 29,	•
	т884	221.85
Dec. 8,	Bingham & MorganTops and covers to valve	
	boxes	32.76
• 46	Buffalo Gas Light CoCoke	4.00
"	S. Chamberlain Wagon repairs	36.50

	& H.Fogalsonger.Door sills, window caps,	
Dec. 8, D. R.	etc., for new coal shed	
	L. E. H \$	84
" G C (Grimard, Cash'r.Weekly pay roll, Dec. 6,	111.04
G. C.		
" Mach	1884wirth BrosConstructing roof to coal	93.50
Machy	_	
" Iames	shed as per contract	513 16
~	Boland Repaying	292.36
Dec. 15, P. G. S	StraubExcavating trench on	
	Main st., bet Erie R.	
D	R. and Alms House	47.65
•	an E. MackAdvertising	3.88
" Bott &	Hughes Painting and glazing new	
" C C !	coal house	175.23
" G. C.	Grimard, Cash'r . Weekly pay roll, Dec. 20,	
	1884	21.00
Dec. 8, James	BolandBld. sewer and receiver	
	cor. Dodge and Mas-	
	ten sts	75.00
		75.00
	\$186	
1884.		
•	\$186	
Jan'y. 21, C. W.	\$186	,623.92
Jan'y. 21, C. W. "Vosbu	\$186 Maintenance and Repairs. Miller	9.50
Jan'y. 21, C. W. "Vosbu "Charle	MAINTENANCE AND REPAIRS. Miller	9.50
Jan'y. 21, C. W. "Vosbu "Charle "James	MAINTENANCE AND REPAIRS. MillerCoach hire\$ rgh & BakerSundries	9.50 .96
Jan'y. 21, C. W. "Vosbu "Charle "James "Lenha	MAINTENANCE AND REPAIRS. Miller	9.50 .96 43.00
Jan'y. 21, C. W. "Vosbu "Charle "James "Lenha "Jos. C	MAINTENANCE AND REPAIRS. Miller	9.50 .96 43.00 18.00 57.50
Jan'y. 21, C. W. Vosbu Charle James Lenha Jos. C Jan'y 28, Henry	MAINTENANCE AND REPAIRS. Miller	9.50 .96 43.00 18.00 57.50
Jan'y. 21, C. W. "Vosbu "Charle "James "Lenha "Jos. C Jan'y 28, Henry "Charle	MAINTENANCE AND REPAIRS. Miller	9.50 .96 43.00 18.00 57.50 10.00
Jan'y. 21, C. W. "Vosbu "Charle "James "Lenha "Jos. C Jan'y 28, Henry "Charle	MAINTENANCE AND REPAIRS. Miller	9.50 .96 43.00 18.00 57.50 10.00 6.00

Mar.	31,	Maurice Laudesberg Bbl. British scale eradi-	
		cator	\$ 94-25
	"	Powell & PlimptonLiniment, blueing, &c	4.17
	"	Lee, Smith & MooreCoal	18.00
	"	Norman E. MackStationery	165.6 <i>5</i>
	• 6	Felthousen & RussellLampwicks and lamps	1.5 5
	"	Young, Lockwood & Co Stationery	50.1 8
	46	G. C. Grimard, Cash'r Pay roll, March	3,226.40
April	14,	C. W. HollowaySand	18.75
	"	Buffalo Rubber Type Co r Autograph and hand	
		stamp	4.00
	"	Weed & Co Barn door roller	.45
	"	E. G. FelthousenLabor and material	13.29
	"	Lee, Smith & MooreCoal	6.10
	"	Hugh McDonaldHorse shoeing	8.00
	• •	Goodyear Rubber CoValves, hose, &c	106.75
	• •	Filsinger & CoHay	29.61
	46	Ulbrich & KingsleySundries	22.65
	"	F. S. PeaseOil	26.50
April	21,	Felthousen & RussellLabor and material	1.00
	"	Buffalo Lub. Oil CoCylinder oil	67.50
	"	C. SturmLabor and material	22.40
	**	Farrar & Trefts " " "	12.30
	• •	Valentine Bros " " "	1.35
	"	John C. PostGlass	.30
	"	Atlas Milling CoFeed	10.80
	• 6	Irlbacker & DavisSundries	2.63
April	28,	Jno. C. HarveyRepairs, wagon	4.90
	"	$H.\ R.\ Worthington\dots.Meter\ sundries\dots\dots$	1.62
	• •	Norman E. MackStationery	25.00
	• •	H. R. WorthingtonLabor and material	55.02
	• •	H. R. WorthingtonMeter sundries	6.20
	• •	H Cherry Hay	20.44

April	28,	H. Becker & Co Harness repairs and sup-	
		pli e s	\$ 45.80
	"	G. C. GrimardPay roll, April	2,719.90
May	5,	Holly Mfg. Co Piston	18.25
	"	Tug Boat "Niagara" Trips to Inlet Pier	30.00
	"	C. G. Milling Packing plate and steel	
		diaphagrams	2.00
	"	S. ChamberlainWagon repairs	5.46
		Hoddick & Co Walnut frame	1.50
	**	Norman E. MackCopy Daily Times, 1/4	1.10
	• •	James BolandRepaving	40.96
May	I 2,	Reid Smith Bay mare, less allowed	
		for 1 bay horse & mule	125.00
	"	Adams, Moulton & Co.Lumber	7.14
	••	Goodyear Rubber CoSundries	58.28
-	46	C. E. Brinkworth2 blue ribbons	1.80
	"	Jno. C. Post 10 lb. red lead	.90
	"	C. KieferStraw and oats	98.56
	"	Hugh McDonaldHorse shoeing	11.05
	"	J. H. Ruckle & CoRubber valves	141.90
	"	C. J. HamiltonLumber	43.14
May	26,	James BolandRepaving	223.00
	"	Atlas Milling CoFeed	9.45
	"	H. Becker & Co Harness repairing, etc	6.95
	"	Buffalo Lub. Oil CoCylinder oil	43.88
	• 6	Hurd & HauensteinLumber	13.25
	"	Bell Telephone CoRent telephone as per	
		contract	143.86
	46	A. H. BrownLabor and material	6.00
	"	Felthousen & RussellSundries	3.79
	"	N. P. Hinckley, V. S Veterinary services	3.50
	"	Jas. SuppleRepairing small boat	25.00
	44	James Franklin50 lbs. tallow	5.00

may	20,	H. G. Trout Labor and material	20.02
	66	G. C. Grimard, Cash'r. Pay roll, May, 1884	,690.59
June	9,	Ludlow Valve Mfg. Co. 12 rubber rings, for hy-	
		drants	6 00
	"	E. G. FelthousenWrenches & flue scrapers	22.38
	"	H. Becker & Co Harness material	4.90
	"	Fries & CoCorporation cocks	422.00
	"	Hugh McDonaldHorse shoeing	16 8o
	"	S. ChamberlainWagon repairs	8 97
	"	W. E. Lock	51.85
	"	S. ChamberlainWagon repairs	15.01
	".	Buff. Rubber Type FyDesk, pad and ink	1.75
	66	Reinecke & Zesch200 copies water report	
		for 1883, &c	115.00
	"	National Meter CoMeter gears	1.50
	66	Goodyear Rubber CoSundries	3 8.36
	46	G. C. Grimard, Cash'r.P. O. stamps	50.00
June	23,	Jno. C. HarveyRepair'g Supt's concord	
		wagon	14.20
	"	The Courier Co400 coin wrappers	1.00
	"	Jabesh Harris, AgentSoft soap	12.50
	"	Buffalo Lub. Oil CoCylinder oil	44.11
	"	A. H. BrownCorporation drills, &c	7.80
	"	Norman E. MackPrinting and stationery.	243.00
	"	Walrath & CoSawdust	13.91
	"	S. Somerville & SonVeterinary services	7.25
	"	C. H. Gibbs Craney mechanical	
		cleaner	130.00
	"	Thos. ParkesSundries	12.56
	"	James BolandRepaving	230.85
	"	Pratt & CoSundries	6.49
June	30,	The Courier Lith. Co Letter heads, pads, &c	39.79
	"	Pratt & Letchworth Linen sheets	6.60

		THE BUFFALO CITY WATER WORKS.	63
June	30,	J. D. SmithSundries	\$ 10.05
_	• 6	E. H. ButlerPup. prop. for coal	7.50
	••	C. J. HeinoldSundries	47.40
	"	G. C. Grimard, Cash'r Pay roll June 1884	2,901.08
	**	G. C. Grimard, Cash'rP. O. stamps	25.00
July	7,	H. R. Worthington Rep. engine counter	4.50
	"	Hugh McDonald Horse shoeing	9.60
	"	A. ChristeyBottle mucilage	1.00
		J. H. Ruckle & Co Ft. valves and strainers.	35.50
	44	H. Cherry Hay	26.67
	66	Farrar & TreftsRep. engine pump house	69.90
	**	S. ChamberlainWagon repairs	83.81
	"	Howard Iron WorksHydrants and castings	1,200.00
	**	Farrar & TreftsRep. engine pump house	90.71
	44	Smith & ShermanPaper and hanging same	76.55
July	14,	A. H. BrownLabor and material	15.90
	"	H. H. BakerSundries	31.98
	"	Fries & CoCorporation cocks, etc	240.80
	44	Buffalo Gas Light CoCoke and cartage	16.00
	**	Buffalo Lub, Oil CoOil	66.61
	• •	Farrar & TreftsEngine repairs, etc	76.93
	• 6	W. Comwith & CoPig lead	2,242.13
	**	R. H. Hibbard, Agt.,	
		Union Steamboat Co.Freight on pig lead	50.96
	"	Goodyear Rubber CoPacking gaskets	5.81
July	21,	J. D. Warren2,000 water arrears pos-	
		tal cards	23.00
	"	Powell & PlimptonSundries	3.06
	66	C. KieferHay	30.28
	"	Mason Bros Compound	2.00
	"	M. RiterRepairs, boilers	74.23
	**	M. RiterRepairs, boilers	40.30
	"	C. J. HeinoldOats	92.03

THE BUFFALO CITY WATER WORKS.

July	21,	, A. Rumsey & CoSide light sole leather\$	5.90
	"	The Courier Co2 copies Buffalo City	
		directory	8.00
	"	C. SturmRep. meters	1.75
	"	C. E. Walbridge2 cash boxes	3.36
	"	G. C. Grimard, Cash'r. Pay roll, July 1884	2,905.00
Aug.	4,	James BolandRepaving	353.22
	"	S. ChamberlainWagon repairs	158.91
	"	C. E. Brinkworth6 badges for inspectors.	12.00
	"	J. J. McWilliamsCoal	7,200.00
Sept	Ι,	Eddy Valve CoValves	403.75
	"	W. B. CollinsRags	3.24
	"	W. H. H. NewmanGalvanized iron	10.80
	"	Bell Waterphone CoUse of 12 waterphones	250.00
	"	Machwirth BrosSundries	13.73
	• 6	Thos. ConboyHay	16.27
	"	National Meter CoSundries	8.20
	44	Goodyear Rubber CoSundries	20.09
	"	Buffalo Lub. Oil CoOil	76.80
	**	A. H. BrownLabor and material	3.50
	••	C. J. HamiltonSundries	28.00
	"	H. McDonald24 new shoes, horses	9.60
	**	Bingham & MorganValve boxes	242 86
	••	J. H. Ruckle & Co Sundries	100.17
	• •	G. C. Grimard, Cash'r Pay roll, August	2,895.25
Sept.	22,	J. J. McWilliams3,000 net tons grate coal. 11	,250.00
Sept.	29,	G. C. Grimard, Cash'r. Pay roll, September 3	3,228.77
Oct.	4,	Henry Becker & CoHarness repairs	1140
	••	Frank CollignonCorporation cocks	316.20
	••	James C. AustinBoiler compound	30,00
	٤.	H. McDonaldShoes for horses	6.80
	••	Ulbrich & KingsleySundries	29.35
	"	H. McDonald Horse shoeing	13.60

" C. Sturm New spindle in wheel 1.00 " H. R. Worthington Rep. engine counter 12.75 Oct. 6, Weed & Co Sundries 9.30 " Kasson Bros Compound 10.00 " Jabesh Harris Soft soap 12.50 " Samuel McCutcheon Sundries 27.75 " Reinecke & Zesch Advertising 4.50 " National Meter Co Meter repairs 4.35 " F. S. Pease Cylinder oil 21.40 " J. H. Ruckle & Co Packing 13.96 " Benjamin Kolb Wagon repairs 63.35 " J. H. Ruckle & Co Sundries 45.40 " H. Becker & Co Harness repairs 27.74 " F. S. Pease Oil 7.74 " Norman E. Mack I copy directory 4.00 " Norman E. Mack Water bills 60.00 " Norman E. Mack Envelopes 10.50 " Thos. Conboy Hay 41.02 " Atlas Milling Co Meal and bran 8.40 " Buffalo Lub. Oil Co Oil 44.33 " Hellriegel Bros Tallow	•		THE BUFFALO CITY WATER WORKS.	65
"H. R. Worthington Rep. engine counter 12.75 Oct. 6, Weed & Co. Sundries 9.30 "Kasson Bros Compound 10.00 "Jabesh Harris Soft soap 12.50 "Samuel McCutcheon Sundries 27.75 "Reinecke & Zesch Advertising 4.50 "National Meter Co Meter repairs 4.35 "F. S. Pease Cylinder oil 21.40 "J. H. Ruckle & Co Packing 13.96 "Benjamin Kolb Wagon repairs 63.35 "J. H. Ruckle & Co Sundries 45.40 "H. Becker & Co Harness repairs 27.74 "F. S. Pease Oil 7.74 "Norman E. Mack 1 copy directory 4.00 "Norman E. Mack Water bills 60.00 "Norman E. Mack Envelopes 10.50 "Thos. Conboy Hay 41.02 "Atlas Milling Co Meal and bran 8.40 "Buffalo Lub. Oil Co Oil 44.33 "Hellriegel Bros Tallow 2.50 "Farrar & Trefts Merchandise <t< th=""><th>Oct.</th><th>4,</th><th>E. G. FelthousenSundries</th><th>\$ 9.56</th></t<>	Oct.	4,	E. G. FelthousenSundries	\$ 9.56
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" Kasson Bros Compound 10.00 " Jabesh Harris Soft soap 12.50 " Samuel McCutcheon Sundries 27.75 " Reinecke & Zesch Advertising 4.50 " National Meter Co Meter repairs 4.35 " F. S. Pease Cylinder oil 21.40 " J. H. Ruckle & Co Packing 13.96 " Benjamin Kolb Wagon repairs 63.35 " J. H. Ruckle & Co Sundries 45.40 " H. Becker & Co Harness repairs 27.74 " F. S. Pease Oil 7.74 " Norman E. Mack I copy directory 4.00 " Norman E. Mack Water bills 60.00 " Norman E. Mack Envelopes 10.50 " Thos. Conboy Hay 41.02 " Atlas Milling Co Meal and bran 8.40 " Buffalo Lub. Oil Co Oil 44.33 " Hellriegel Bros Tallow 2.50 " Farrar & Trefts Merchandise 148.79 " Farrar & Trefts Merchandise 14.87 " Farrar & Trefts Merchandise <td< td=""><td></td><td>44</td><td>H. R. WorthingtonRep. engine counter</td><td>12.75</td></td<>		44	H. R. WorthingtonRep. engine counter	12.75
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"Atlas Milling Co Meal and bran 8.40 "Buffalo Lub. Oil Co Oil		44	Norman E. MackEnvelopes	10.50
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' Hellriegel Bros Tallow 2.50 " Farrar & Trefts Merchandise 57.28 " Farrar & Trefts Merchandise 148.79 " Farrar & Trefts Merchandise 49.88 " J. D. Warren Printing 48.00 " S. Somerville & Son Veterinary services 14.00 " J. J. McWilliams Coal 8,250.00 " G. C. Grimard, Cash'r. P. O. stamps 50.00 Oct. 20, D. McNaughton Sundries 52.85 " W. C. McDonald Hoisting coal 253.10 " W. B. Collins Rags 4.14		••	Atlas Milling Co Meal and bran	8.40
"Farrar & Trefts. Merchandise. 57.28 "Farrar & Trefts. Merchandise. 148.79 "Farrar & Trefts. Merchandise. 49.88 "J. D. Warren. Printing. 48.00 "S. Somerville & Son. Veterinary services. 14.00 "J. J. McWilliams. Coal. 8,250.00 "G. C. Grimard, Cash'r. P. O. stamps. 50.00 Oct. 20, D. McNaughton. Sundries. 52.85 "W. C. McDonald. Hoisting coal. 253.10 "W. B. Collins. Rags. 4.14		"	Buffalo Lub. Oil CoOil	44.33
"Farrar & Trefts		•	Hellriegel BrosTallow	2.50
"Farrar & Trefts		**	Farrar & TreftsMerchandise	57.28
" J. D. Warren		"	Farrar & TreftsMerchandise	148.79
" S. Somerville & Son Veterinary services. 14.00 " J. J. McWilliams Coal		• 6	Farrar & TreftsMerchandise	49.88
" J. J. McWilliams 8,250.00 " G. C. Grimard, Cash'r.P. O. stamps 50.00 Oct. 20, D. McNaughton Sundries 52.85 " W. C. McDonald Hoisting coal 253.10 " W. B. Collins Rags 4.14		46	J. D. Warren Printing	48.00
" G. C. Grimard, Cash'r.P. O. stamps 50.00 Oct. 20, D. McNaughton Sundries 52.85 " W. C. McDonald 253.10 " W. B. Collins Rags 4.14		• •	S. Somerville & SonVeterinary services	14.00
Oct. 20, D. McNaughton		"	J. J. McWilliamsCoal	8,250.00
" W. C. McDonaldHoisting coal 253.10 " W. B. CollinsRags 4.14		66	G. C. Grimard, Cash'r.P. O. stamps	50.00
" W. B. CollinsRags 4.14	Oct.	20,	D. McNaughtonSundries	52.85
-		"	W. C. McDonaldHoisting coal	253.10
Oct. 27, G. C. Grimard, Cash'r. Pay roll, Oct 3,220.73		46	W. B. CollinsRags	4.14
	Oct.	27,	G. C. Grimard, Cash'r. Pay roll, Oct	3,220.73

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Nov.	10,	The Bell Telephone Co. Telephone rent	\$147.50
	"	C. J. HeinoldBran and oats	79.50
	"	Union Water Meter Co. Meter register case lids.	2.50
	"	C. Kiefer Hay and oat meal	2.01
	"	J. Laycock & SonPine lumber	28.80
	"	Bickford & FrancisSundries	6.50
	"	Tifft Furniture CoOne office chair	5.00
	44	S. ChamberlainWagon rep	34.40
	"	F. S. PeaseOil	58.45
	44	John LythElbows and S. trap	6.68
	44	Goodyear Rubber Co Gaskets and hip boots	10.00
	"	Felthousen & RussellSundries	6.18
	"	J. D. Lytle & SonsStable supplies	5.00
	"	Buffalo Scale CoWheelbarrow scale	33.00
	٠.	Ulbrich & KingsleySundries	9.45
	"	Valentine & SonKeys, etc	2.00
	"	James FranklinTallow	9.00
	"	S. S. Jewett & CoStove door	.35
	"	John C. HarveyWagon repairs	14.00
Nov.	17,	Young, Lockwood & Co.Sundries	24.78
	"	Farrar & TreftsLabor and material	64.83
	• •	Pratt & CoSundries	45-75
	"	Thomas ConboyPasturing horses	31.40
	"	Weed & CoSundries	10.32
	• •	J. D. WarrenPrinting	47.50
	"	H. McDonaldHorse shoeing	8.80
	"	Hardwick & Ware Public hydrant and re-	
		pairing the same	6.50
	"	Goodyear Rubber CoGaskets	3.24
	• •	C. J. HamiltonLumber	1.00
	"	F. S. PeaseOil	29.42
	••	H. Becker & Co Harness repairs	46.35
		John C. Post	10.80

Ulbrich & Kingsley...Sundries.....

C. J. Heinold......Sundries.....

28.00

19.55

"

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THE BUFFALO CITY WATER WORKS.

Dec. 15, S. S. Jewett & CoCastings	13.12
" National Meter Co Meter gear wheels	1.25
" Ludlow Valve Mfg. Co. Stems and nuts	27.00
" J. J. McWilliamsCoal	4,780.13
Dec. 22, C. J. HamiltonLumber	1.75
" C. KieferStraw	28.14
" R. H. Thayer & Co Hydrant boxes	276.30
" Bott & HughesPainting	8.00
" C. Sturm Meter repairs	8.50
" McDonald & LynchRep. roof u. engine h	I 2.00 -
" Powell & Plimpton2 Chamois skins	1.30
" Norman E. MackDaily Times April 1 to	
July 1	1.25
. " Norman E. MackDaily Times July 1 to	•
August 1	2.10
" Norman E. MackPrinting	56.74
" Maytham's Line of Tugs. Tug hire	20.00
" A. GeckieMarsh hay	147.28
" S. ChamberlainWagon repairs	38.86
" G. C. Grimard, Cash'r. P. O. stamps	25.00
" " Pay roll, December	4,775.76
·	· · · - ·

^{\$81,078.88}

SERVICES.

Total number of Services in the City January 1, 1885, is nineteen thousand five hundred and thirty-seven, an increase of eight hundred and seventy-four over the previous year.

CORPORATION COCKS.

Statement of Corporation Cocks on hand, received and inserted from January 1st, 1884, to January 1st, 1885.

On hand January 1st, 1884		% Inch. 83	34 Inch.	1 Inch. 26
Received during 1884	3,652	60	63	
Total	4,284	143	70	26
Inserted during 1884	3,514	16	34	I
On hand January 1st, 1885	765	8 r	36	24
Number paid for by applicants	3,481	3 9	23	I

METER STATEMENT.
Statement Showing Revenue per Meter Measurement for the Twelve Months Ending Jan. 1, 1885.

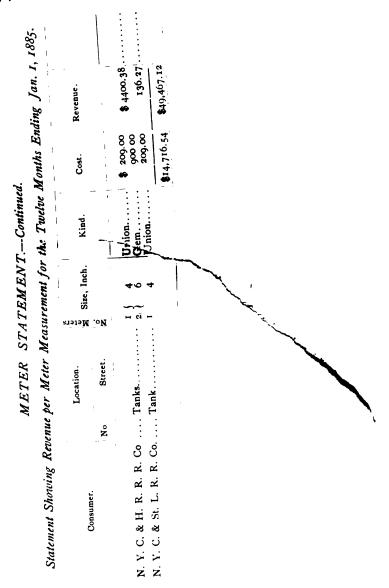
Coat		\$ I12.92	108.62 9 months.	130.99	246 37		, -	42.00 121.68				198.00 252.57	51.52		42.00 49.08	~		63.00	37	1	
Xind		hoist Howard	hoist Howard	hoist Howard	hoist Howard	Worthington.			ist	Union	Gem	Union	Worthington.	V Union		_	٠.	-	Gem	Union	Union
Meters.		. I Elev. h		Elev. P			7 Z	. 1 . 1.72	I Elev.	. I 4	. I. 4	H H	2 2 2	** ~ · · · · · · · · · · · · · · · · · ·	P I	, 1	X1 1	. 1	2 3	~ F	
Location.	No. Street,	396 Main	10 Express	263 Washington	265 Main	77 Washington	467 North Division.	248 Carroll.	64 Exchange	Foot of Penn	1213 Clinton	240 West Genesee.	234 Scott	133 Wilkeson	424 Niagara	293 Court	To West Bennett	462 West Virginia	160 High	481 Spring	162 Pratt
1		Adam, Meldrum & Anderson	Adam, Meldrum & Anderson		: :	-	:	:	:	Buffalo Alcholene Works	Buffalo Car Mfg. Co	:		Brish Flectric Light Co	Clark Manufacturing Co	Citizens' Gas Light Co	:	Cornell Lead Works	Co-operative Brewing Co		Cook F. N. & Co

Dennis, C	252 Allen	1. I	y On	Union	\$ 42.00	\$ 74.00 4 months.
Driscoll, Mrs	104 Burton Al	ı	ລັ	Union	27.00	30.95
Dold, Jacob	741 William	 	ڏِيّ	Gem	99.00	396.59
Exstein, Hiram	185 Washington	2. Elev.	2 Elev. hoist Howard.	ward	, :	61.54
Exstein, Hiram	47 Exchange	I Elev.	Elev. hoist Howard	ward	•	72.61
Frank & Co	176 L. Terrace	1 1	ņ	Union	27.00	56.75
Gerber, Chas	821 Main	1 2	2 Сеп	я	49.50	148.41
Glenny, W. H. & Co	41; Pearl	I Elev.	hoist, Ho	ward	: : : : : :	55.506 months.
Goodyear Rubber Co	9 W. Seneca	I Elev.	Elev. hoist Howard.	ward	:::::::::::::::::::::::::::::::::::::::	84.0I
Hamilton, C. J	103 Erie	I I	Z We	I 1/2 Worthington.	41.40	85.24
Hayen, J. F.	222 Main	ı Elev.	hoist Ho	ward		426.15
Harvey & Henry	107 Chicago	I 3	Ü	Union	106 50	625.46
	11 High	_	C	Union	200).00	60.69
rks	285 Chicago	-	×	Worthington.	51.52	202.89
	187 Michigan	1 2	D _.	Union	63.00	99.42
Kaltenbach, F. X	462 Eagle	Ι΄ 3	3	Gem	00 66	183.34
	_	~	<u></u>	Gem	49.50	
Klinck, C	50 Depot	3 7 2	×	Worthington.	51.52	583.33
-		_	n N	Union	42.00	
Lang, G	400 Best	2	جَّ	Gem	396.00	583.24
Laub & Zeller	752 Clinton	1 3	ઙ	Gem	00.66	161.72
Laverack & Co	231 Washington	I Elev.	hoist Ho	Howard	- :	220.62
Lee, Holland & Co	62 Wilkeson	1	ວ	Union	200.00	543.33
Luippold, J. M	301 Emslie	2 I	×	Union	45.00	67.85
Marcus, S. & Son	183 Washington	I Elev.	hoist	Howard		99.83
Mason, S. L. & Bro	210 Scott	1 2	<u>×</u>	Worthington.	51.52	118.63
McGrath & Bisgood	88 Pearl	I Elev.	hoist Howard	ward		76.97
Meyer, Joseph O	686 Eagle	- 	Z.	Union	42.00	71.046 months.
•)		5:		03.00	•
Niagara Elevator	375 Ohio	2	5	Union	100.50	102.50
		N .) A	worthington.	51.52	

METER STATEMENT.—Continued.

Revenue.	\$ 2.951 month. 49.106 months. 37.57 6 months. 169.41 63.21 7 months. 133.95 471.94 386.01 341.23 229.57 229.57 307.33 68.38 6 months. 58.70 9 months. 78.91 163.83 35.50 75.96 7 months. 74.27 6 months. 132.37
Cost.	49.50 19
Kind.	hoist Howard hoist Howard Union Com hoist Howard Crown Crown Com Com Com Hoist Howard Com
Size, Inch.	Elev. hoist Howard Elev. hoist Howar
Location. No. Street.	204 L. Terrace
Consumer.	Oppenheimer & Co. Dippenheimer & Co. Pratt, Mrs. S F Pratt & Letchworth Powell & Letchworth Powell & Pilmpton Plumb, Burdict & Barnard Ramsdell, Sweet & Co. Roos, George Rochevot, George Rumsey & Co. Russey & Co. Russey & Co. Russey & Co. Scharer, A. Schafer, A. Schafer, A. Schoellkopf Sons. Schoellkopf & Co. Sizer, W. S. Schoellkopf & Co.

50.44	167.28	48.88 83.31	63.25 II months.		266.15	76.09 to months.	32.566 months.	133.90	830.47		158.84		15352.48		010		699.88	342.23	3744.57					4886 A4		
42.00	}	42.00		200,00 106.50	00 66	27.00	103.04		:	148.50	00 66 6	63.00	200.00	1980.00	03.00	450.00	450.00	418.00	294.00	594.00	40 50	. 22.00	30.00	00.066	99.00	627.00.
Union	st Howard	I 1/2 Union	st Howard	Union	Gem	Union.	Worthington.	st Howard	hoist Howard	Gem	Gem	Union	Union	Gems	Union	Gem	Gem	Union	Gem	Gem	Gem	Crown	Crown	Gem	Gem	Union
1, 1,7	Elev. hoist	I I I I	I Elev. hoist	+ (C - , -)	° 60 - 7 - 7	1 1	CI		· Elev. hoi	3 (2	1 - 3	z) 1	→	oı ~`	, ≥ 2	5. 2. ← 6	9 1	4	3 4	3 +	7) I	71 71	ı) ı	01 } 10	I, (4
226 Ohio	66 Broadway.	200 Cherry	301 Main	242 Oneida	793 Main	292 Elm	283 Perry	563 Main	9 Exchange	1	Main		188 Scott		#:::\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	320 Courte	Tank	Tanks	Tanks, etc	Tanks	Tanks			Tanke		Tanks
Trout, H. G.	Ullman, D	_ :	Weller, I. I.	Bros. & Co	Weyand, C		& Co		:		Ziegele, A			Alliencen Glucose Co		:	B. N. Y. & P. R. R. Co	D. I., & W. R. R. Co	I., S. & M. S. R. R. Co	N. Y. I. E. & W. R. R. Co.	O a a w & a i v v	N. 1. 1. E. & W. D. D. O.		NVIEWWDBC	N. 1. L. E. & W. N. M. O.	N. Y. I., E. & W. R. R. Co.



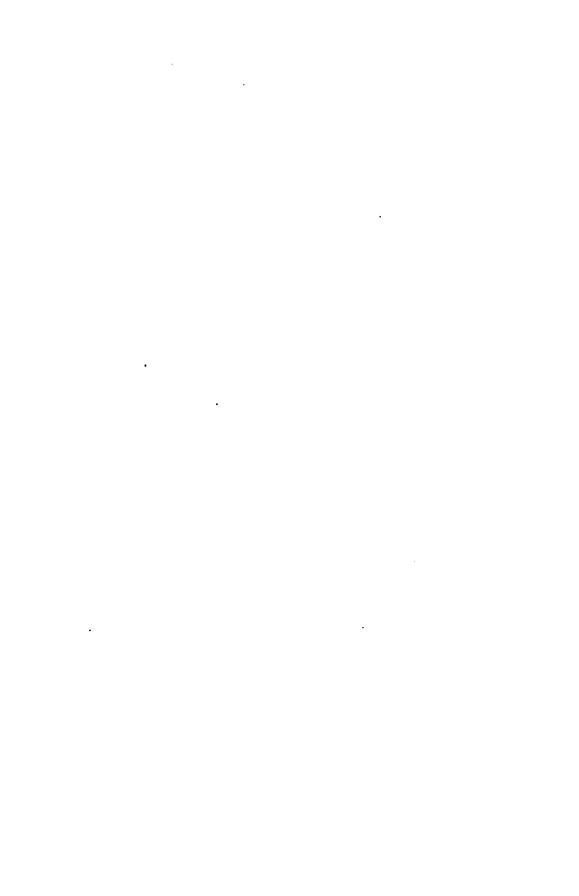
DISTRIBUTION

OF THE

'ATER DEPARTMENT

FOR THE

YEAR 1884.



ASTOR, LENDY HIS TILLEN FOLINDATIONS.

THE NEW CONTIONS.

FIRE HYDRANTS.

The number of Fire Hydrants placed during the year on new line of mains was one hundred and nine, of which thirty-three was on the high service, and seventy-six on the reservoir supply, making the total number in the city on January 1, 1885, one thousand five hundred and fourteen.

HYDRANTS SET ON NEW MAINS.

Location.	System.	Number.
Abbott Road, north side, 1,000 feet east of Smith	R.	1
Abbott Road, north side, 1,300 feet east of Smith	R.	I
Berlin street, west side, 615 feet north of High	H.	ī
Best street, northwest corner of Masten	H.	1
Boston alley, southwest corner of Virginia	Н.	1
Bouck avenue, northwest corner of DeWitt	R.	1
Broadway, northwest corner of Oak	"	1
Broadway, southeast corner of Elm	"	1
Broadway, southwest corner of Milnor	"	1
Broadway, southeast corner of Pine	"	I
Broadway, southwest corner of Cedar	• 6	1
Broadway, northeast corner of Walnut	46	1
Broadway, southwest corner of Hickory	"	1
Broadway, southeast corner of Pratt	"	1
Broadway, northwest corner of Herman	**	ı
Broadway, northwest corner of Guilford	"	1
Broadway, northwest corner of Reed	"	1
Broadway, northwest corner of Strauss	46	. 1
Broadway, northwest corner of Fillmore Avenue	"	ı
Central Avenue, east side, 575 feet north of William.	"	1
Chapin Parkway, west side, 510 feet south of Clinton		
Avenue	"	1
Chenango street, northeast corner of Utica	"	1

Lecation.	-	Number.
Clifford street, northwest corner of Selkirk	R.	I
Danforth street, southeast corner of Bradley	"	I
Davis street, south side, 160 feet west of Jefferson	"	1
Delaware avenue, east side, 494 feet south of Chapin		
Place	Н.	I
Delaware avenue, southeast corner of Chapin Place	H.	I
DeWitt street, east side, 460 feet north of Forest Ave.	R.	1
Dodge street, south side, 360 feet east of Ellicott	H.	1
Eaton street, north side, 350 feet east of Michigan	H.	I
Eighteenth street, southeast corner of Massachusetts.	R.	I
Elk Street, southwest corner of Winona	R.	ī
Erie Co. Alms House, southwest corner of Insane De-		
partment	H.	I
Erie Co. Alms House, northwest corner of Insane De-		
partment	"	I
Erie Co. Alms House, near northeast corner of Insane		
Department	66	I
Erie Co. Alms House, near northwest corner of Poor		
Department	44	I
Ferry street, northwest corner of Barton	R.	ī
Ferry street, northeast corner of Herkimer	"	1
Ferry street, northeast corner of Grant	"	I
Ferry street, northwest corner of Preston	44	I
Ferry street, northeast corner of Hoyt	"	1
Ferry street, northwest corner of Webster	"	I
Ferry street, northwest corner of Howard avenue	Н.	1
Ferry street, northwest corner of Ashland avenue	46	1
Ferry street, northwest corner of Elmwood avenue	**	1
Ferry street, north side, 510 feet east of Elmwood		
avenue	"	1
Fourteenth street, southwest corner of Hampshire	R.	I
Fulton street, southeast corner of Hamburg	••	1
Fulton street, southwest corner of L. S. & M. S. R. R.	"	1

Looation.	System.	Number.
Ganson street, northeast corner of South Michigan	R.	Ţ
Ganson street, east side, 290 feet north of S. Michigan	66	1
Ganson street, east side, 620 feet north of S. Michigan	"	1
Ganson street, east side, 950 feet north of S. Michigan	"	1
Ganson street, east side, 220 feet south of S. Michigan	44	1
Ganson street, east side, 420 feet south of S. Michigan	**	, I
Ganson street, east side, 620 feet south of S. Michigan	"	1
Ganson street, east side, 820 feet south of S. Michigan	**	1
Ganson street, east side, 1,020 feet south of S. Michigan	"	I
Ganson street, east side, 1,220 feet south of S. Michigan	"	1
Ganson street, east side, 1,420 feet south of S. Michigan	44	1
Ganson street, east side, 1,620 feet south of S. Michigan	44	I
Ganson street, east side, 1,820 feet south of S. Michigan	**	I
Ganson street, east side, 2,020 feet south of S. Michigan	46	I
Ganson street, east side, 2,220 feet south of S. Michigan	• 6	1
Ganson street, east side, 2,420 feet south of S. Michigan	••	ı
Ganson street, east side, 2,620 feet south of S. Michigan	**	1
Ganson street, east side, 3, 100 feet south of S. Michigan	"	1
Garason street, west side, in yard of Island R. R. Co	• •	1
Grape street, southwest corner of Best	H.	I
Hampshire street, southwest corner of Fargo Avenue.	R.	1
Hampshire street, southwest corner of West Avenue.	"	1
Hampshire street, southwest corner of Plymouth Ave	4.	1
Herman street, west side, 465 feet north of Broadway	44	I
Herman street, west side, 930 feet north of Broadway	"	ī
Herman street, southwest corner of North	"	I
Howard street, southwest corner of Thomas	"	1
Jefferson street, southwest corner of Dodge	H.	1
Jefferson street, southwest corner of Northampton	46	1
Jefferson street, southwest corner of Barr	"	1
Johnson street, southwest corner of North	R.	1
Johnson street, southwest corner of High	"	I
Laurel street, southwest corner of Masten	H.	ı

Location.	System.	Number.
Laurel street, south side, 345 feet west of Masten	H.	I
Main street, east side, 600 feet north of Amherst	44	I
Main street, east side, 1,200 feet north of Amherst	"	I
Main street, east side, 1,800 feet north of Amherst	44	I
Main street, east side, 2,800 feet north of Amherst	44	I
Main street, southeast corner of Poor House Lot	**	I
Main street, east side, 900 feet south of Poor House		
Lot	46	1
Main street, east side, 2,100 feet south of Poor House		
Lot	44	I
Masten street, west side, 385 feet north of Ferry	"	I
Masten street, west side, 810 feet north of Ferry	"	I
Miami street, northwest corner of Hamburg	R.	1
Nineteenth street, northeast corner of Rhode Island.	"	I
Nineteenth street, southeast corner of Massachusetts.	44	I
Oneida street, south side, 110 feet west of Smith	"	I
Riley street, northwest corner of Masten	H.	, I
Seventh street, northeast corner of Massachusetts	"	I
Sherman street, southwest corner of North	R.	I
Sherman street, southwest corner of High	"	ī
Sherman street, east side, 435 feet north of Broadway	**	1
Sherman street, east side, 870 feet north of Broadway	66	I
Stanton street, west side, 285 feet north of Howard	"	I
St. John's Place, northwest corner of Wadsworth	H.	I
S. Michigan street, south side, 220 feet east of Ganson	R.	I
Terrace, northwest corner of Evans	44	1
Terrace, southeast corner of Eagle	**	ı
Walter street, southwest corner of Perry	4.6	Ī
Wilkeson street, southwest corner Sixth	• •	1
Total		109

THE BUFFALO CITY WATER WORKS.		107
On High Service	•	6
Set in in previous years		– 109 7 2 – 1,405
Total Hydrants in City December 31, 1884		1,514
New Hydrants Put in to Replace Old	Ones.	
Location.	System.	Number.
Adams street, west side, 375 feet south of Brown	R.	I
Adams street, west side, 415 feet south of Beckwith	"	I
Best street, southeast corner of Berlin	H.	1
Best street, southeast corner of Fox	"	1
Best street, southeast corner of Fillmore ave		1
Brown street, southwest corner of Madison	R.	1
Brown street, southwest corner of Monroe		1
Butler street, south side, 600 ft. west of Delaware ave.	H.	1
Butler street, south side, 1,200 feet west of Delaware	• •	
Ave.	"	I
Butler street, southeast corner of Elmwood Ave	"	I
Butler street, southeast corner of Ashland Ave	"	I
Butler street, southeast corner of Howard	"	I
Butler street, southeast corner of Richmond Ave	"	I
Carlton street, northeast corner of Mulharry	6	I
Carrell street, court side are feet east of Mishigan	R.	I .
Carroll street, south side, 320 feet east of Michigan Clinton street, south side, 700 feet east of Fillmore	K.	1
Ave	66	I
College street, northeast corner of Allen	H.	1
College street, southeast corner of North	**	1

Location.	System.	Number.
Connecticut street, southwest corner of Seventh	Н.	I
Connecticut street, southwest corner of Richmond Ave.	**	I
Cottage street, southwest corner of Hudson	**	1
Delaware Ave., east side, 320 feet south of Tupper	R.	I
Delaware Ave., east side, 250 feet north of Tupper	H.	I
Delaware Ave., northwest corner of Edward	"	1
Delaware Place, north side, 350 feet west of Delaware		
Ave	"	I
East Market street, west side, 240 feet south of Scott	R.	I
East Market street, west side, 480 feet south of Stott	"	I
Efner street, west side, 315 feet south of Maryland	66	I
Efner street, northwest corner of Maryland	**	1
Elk street, northwest corner of Mississippi	**	I
Elk street, south side, 200 feet east of Moore	• •	I
Elk street, southwest corner of Chicago	44	I
Elk street, south side, 300 feet east of Chicago	44	J
Elk street, south side, 400 feet east of Hamburgh	"	I
Elk street, southwest corner of Fitzgerald	44	ī
Elm street, southeast corner of Vine Alley	••	1
Elm street, east side, 300 feet north of Broadway	••	1
Emslie street, east side, 285 feet south of William	66	I
Ferry street, north side, 510 feet west of Delaware		
Ave	H.	I
Ferry street, north side, 1,020 feet west of Delaware		
Ave	44	1
Ferry street, northeast corner of Niagara	R.	ī
Fifth street, west side, 315 feet south of Carolina	4.	1
Fifth street, southwest corner of Maryland	46	1
Fifth street, west side, 315 feet south of Hudson	••	I
Fifth street, northwest corner of Root		I
Forest Ave., south side, 250 feet west of Grant	• 6	I
Forest Ave., southwest corner of Hoyt	"	1
Forest Ave., southwest corner of Lincoln Parkway	"	I

Location.	System.	Number.
Fourteenth street, southwest corner of Porter Ave.,	Н.	I
Fourth street, southwest corner of Maryland	R.	1
Franklin street, southeast corner of Virginia	Н.	I
Franklin street, southeast corner of North	••	Ι.
Fremont Place, southeast corner of North	44	1
Gelston street, northwest corner of of Auburn Ave	R.	I
Genesee street, north side, 120 feet west of Erie canal	44	1
Goodell street, southeast corner of Boston Alley	Н.	I
Henry street, southwest corner of Terrace	R.	1
High street, southwest corner of Oak	Н.	1
High street, southeast corner of Elm	44	I
Krettner street, southeast corner of William	R.	I
Linwood Ave., east side, 485 feet north of Utica	H.	I
Louisiana street, east side, 315 feet south of Hamburgh		
canal	R.	1
Louisiana street, southeast corner of Perry	46	1
Mackinaw street, southeast corner of Tennesee	44	I
Main street, east side, 100 feet north of Ohio	44	I
Main street, west side, 220 feet north of Exchange	46	I
Main street, northeast corner of Dodge	H.	I
Mariner street, southeast corner of North		τ
Mariner street, east side, 470 feet south of North	• •	1
Michigan street, east side, 300 feet north of Elk	R.	I
Michigan street, southeast corner of South Division.		1
Michigan street, east side, 250 feet north of Genesee.	66	I
Michigan street, east side, 110 feet north of Goodell.	H.	1
Michigan street, east side, 250 feet north of Burton		
Alley	**	1
Michigan street, northeast corner of Virginia	**	1
Michigan street, east side, 300 feet south of Carlton.	"	I
Mississippi street, east side, 330 feet south of Perry	R.	1
North Division street, north side, 260 feet east of		
Chestnut	R.	1

Location.	System.	Number.
Niagara street, northwest corner of Vermont	H.	1
Oak street, west side, 290 feet north of Carlton	H.	1
Ohio street, northeast corner of Indiana	R.	I
Park street, northwest corner of Virginia	H.	1
Park street, southeast corner of North	"	1
Pennsylvania street, southeast corner of Prospect Ave.	44	1
Porter Ave., southeast corner of Seventh	66	ī
Red Jacket street, northwest corner of Fulton	R.	I
School street, northwest corner of Niagara	"	1
Scott street, north side, 450 feet east of Washington.	"	1
Scott street, south side, 450 feet west of Chicago	"	I
Scott street, southwest corner of Chicago	• •	ı
Scott street, northeast corner of Heacock	"	1
Seventh street, southeast corner of Vermont	H.	I
Sixth street, southeast corner of Pennsylvania	R.	1
South Division street, southwest corner of Cedar	• 6	I
Spring street, west side, 420 feet north of William	"	I
Summer street, north side, 400 feet west of Delaware		
Ave	H.	I
Terrace, west side, 200 feet north of Church	R.	I
Walnut street, west side, 375 feet north of Broadway.	"	I
Walnut street, east side, 360 feet north of Sycamore	"	I
Washington street, southeast corner of Carroll	• •	1
Washington street, southwest corner of Seneca	••	I
Washington street, southeast corner of South Division	••	1
Watson street, west side, 450 feet north of William	••	1
Watson street, southwest corner of Peckham	••	1
West Ave., northeast corner of Carolina		ı
William street, northeast corner of Michigan	"	I
William street, southeast corner of Stanton	"	1
York street, northwest corner of Plymouth Ave	H.	I
Total		109

HYDRANTS ABANDONED IN 1884.

Location.	System.	Number.
Lloyd street, southwest corner of Water	R.	Ţ
Washington street, east side, 300 feet north of Carlton.	H.	1
Total		2

DRINKING FOUNTAINS.

Street	Location.	Number.
Main	Northwest corner of Seneca	r
"	" " Erie	I
"	East side, 80 feet north of Clinton	1
	Southeast corner of Huron	I
		_
Tota	1	4

HORSE FOUNTAINS.

Street.	Location.	Number.
Broadway So	outhwest corner of Milnor	I
Elk O ₁	pposite West Market	1
"Sc	outhwest corner of Hamburgh	I
$Genesee \dots \dots N$	ortheast corner of Ellicott	I
Main Co	orner of Ferry	
"	" " Steele	1
Maryland	" " Fifth	г
Niagara	est side, between Franklin and Ea	agle 1
"N	ortheast corner of Prospect Ave	I
"Co	orner of Clinton	
"	" " Amherst	1
"N	ortheast corner of Austin	1

Street.	Location.	Number.
Niagara	Corner Hertel Ave	1
Seneca	At junction with Swan	I
York	Corner of Thirteenth	1
Total	l	15

FREE HYDRANTS.

Location,	System.	Number.
Chicago, northwest corner of Mackinaw	R.	1
Chicago, southeast corner of Elk		1
Chicago, southeast corner of Fulton	**	I
Elk, northeast corner of Columbia	44	ī
Elk, southeast corner of Moore	44	I
Elk, southeast corner of Hamburg	64	ī
Exchange, north side, between Jefferson and Ham-	-	
burgh	44	1
Exchange, northwest corner of Heacock		1
Fifth, northwest corner of Georgia	• •	I
Fourth, northeast corner of Carolina	46	1
Genesee, northwest corner of Fox	4.6	1
Louisiana, east side, between Ohio and South	"	1
Louisiana, northeast corner of Sandusky		I
Mackinaw, southeast corner of Tennesee	46	1
Mackinaw, southwest corner of Vandalia	"	ī
Perry, southwest corner of Illinois	44	ı
Perry, southeast corner of Hamburg	44	1
Perry, southwest corner of Hayward	. "	ī
Scott, southwest corner of Illinois	**	1

THE BUFFALO CITY WATER WORKS.		113
Location.	System.	Number.
Selkirk, east side, between Exchange and Perry	R.	1
William, southeast corner of Smith	"	I
		_
Total		2 [

Schedule of Water Pipe laid, giving Location, Size of Pipe, and on what System.

EAST SIDE.

Street.	From.	T.	Size of Pipe. Inches.	System.	Location of Pipe.
Abbott Bood	, 1	in the state of th	; «		of the store line
About Mad		1350 icel castelly			20 It. II. 01 3. IIIIC.
Adams	Clinton	William			22 it. e of w. line.
Adams	William.	Brown	20		19 ft. e. of w. line.
Adams	Brown	Genesee	9		14 ft. w. of e. line
Alabama	Seneca	Carroll	4		16 ft. e. of w. line
Alabama	Mackinaw	300 feet southerly	••		18 ft. w. of e. line.
Ash	Genesee	Broadway	4	~	33 ft. w. of e. line.
Babcock	William	Clinton		×	45 ft. w. of e. line.
Beckwith	Adams	Sycamore	9	2	20 ft. n. of s. line.
Beech	Virginia	Carlton	9	×	36 ft. w. of e. line,
Bennett	William	Broadway	4	2	35 ft. e. of w. line.
Berlin	High	Best	ဖ	Ή	26 ft. e. of w. line.
Best	Main	Masten	9	Ξ	25 ft. s. of n. line.
Best	Jefferson	Fox	0	I	24 ft. n. of s. line.
Best	• • • • • • • • • • • • • • • • • • • •	Genesee.	œ	Ξ	23 ft. n. of s. line.
Blossom alley		Broadway	4	×	15 ft. e. of w line.
Bond	• • • • • • • • • • • • • • • • • • • •	Howard	4	~	18 ft. w. of e. line.
Boston alley		Virginia	4	Ξ	7 ft. e. of w. line.
Bristol	Spring	Jefferson	•	~	37 ft. s. of n. line.
Bristol	• • • • • • • • • • • • • • • • • • • •	Bond	4	2	44 ft. s. of n. line.
Broadway	Lafayette	Ellicott	9	~	50 ft. s. of n. line.
Broadway	Ellicott	Pratt	9	~	50 ft. s. of n. line.
Broadway	Pratt	Fillmore avenue		2	2 {35 ft. s. of n. lin
			?	:	, { 50 ft. s. of n. lir
Broadway	Sherman	Smith	4	~	5 ft. n. of s. line.
Brown	Adams	Jefferson	8	×	20 ft. n. of s. line.

Burdy alleyBurton alley	Sycamore	350 feet northerly	4 7 8 E	12 ft. w.	of e.	line.
Burton alleyCamp.	Kalph alleyGenesee.	MichiganSvcamore.	4 0 I X	16 ft. n	o 9.	line.
Carlton	Main.	Mulberry		نے	of n.	line.
Carlton	Lemon	Genesee		نے	of n.	line.
Carroll	:	200 feet west of Chicago		ä	. of s.	line.
Carroll	200 feet west of Chicago	,, ,, ,, ,, ,, ,,	٠.	۳	of s.	line.
Carroll	Chicago	Louisiana		ند	of n.	line.
Carroll	Louisiana	Alabama		نے	of n.	line.
Carroll	Heacock.	400 feet east of Van Rens.		نے	of n.	line.
	Jefferson	660 feet easterly	_	نے	. of s.	line.
	Swan	Broadway	6 R	نے	of e.	line.
Central avenue	William	975 feet northerly	6 R	یے	. of e.	line.
Center	Seneca	Swan	*	ت	of e.	line.
	Michigan	Virginia	20 R	نے	of s.	line.
Chicago	Sen. ca	too feet northerly	I.F. R			
Chicago	Seneca	Carroll	4	28 ft. e.	of w.	line.
Chicago	Carroll	Exchange	6 R			
Chicago	Exchange	Ohio	16 R	بي	of w.	line.
Chippewa		Ellicott.	9 9	نے	of s.	line.
Clifford		Selkirk	_	25 ft. n.	of s.	line.
Clinton		Madison		نے	of n.	line.
Clinton	Washington	Oak	Ξ.	نے	of n.	line.
Clinton	Oak	Union	6 R	نے	of n.	line.
Clinton	Union	Emslie	_	یے	. of s.	line.
Clinton	Emslie	Babcock	9	نے	. of s.	line.
Columbia	Perry	Elk	6 R	بي	. of e.	line.
Columbia	Ohio	Buffalo river	16 R			
Cypress	Michigan	Pine	6 R	26 ft. s.	of n.	line.
Davis	Genesee	Jefferson	4	/ 26 ft. w. of e. li / 20 ft. n. of s. li	w. of n. of	e. line s. line
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hat System.	System.	28 ft. w. of e.	R 40 ft. n. of s. line.	R 24 ft. s. of n. line. R		II 38 ft. n. of s. line.	R 38 ft. s. of n. line.	40 ft. s. of n.	R 39 ft. s. of n. line.		R 39 ft. w. of e. line.	R 24 ft. e. of w. line.	H 15 ft. w. of e. line.	H 15 ft. w. of e. line. R 12 ft. w. of e. line.	نه	it. e. of w.	 ₩	R 26 ft. w. of e. line.	ğ. ¥.¥
d on w	Size of Pipe. Inches.	9 4	0 0	9 8	40	9	40	_	9	4 4	4	4	4	0 4	101	9	9 .	4-0	40
Schedule of Water Pipe laid, giving Location, Size of Pipe, and on what System.	To.	North line of lot 58	Emslie	Smith.	Perry Fulton	400 feet easterly	Mississippi.	Babcock	500 feet easterly	Eagle.		Genesee	550 feet northerly	Tupper		Goodrich	Dodge	Sycamore	GeneseeTupper
ater Pipe laid, giving L	From.	William	Washington	Bond	Scott Perry	Michigan	Ohio	Michigan.	Babcock	South Division	Seneca	Broadway	Chippewa	550 teet north of Chippewa	Tupper	Goodell.	Best	Broadway	Sycamore
Schedule of W	Street.	Depot	Dodge Eagle	Eagle	East Market.	Eaton	EK	Elk	Elk	Ellicott	Ellicott	Ellicott	Ellicott	Ellicott	Ellicott	Ellicott	Ellicott	Ela	Elm

Elm	Tupper	High	9		نے	of e.	line.
Elm	North	Best	_	_	یے	é	line.
Emslie	Seneca	Broadway	_		بع	of w.	line.
Euclid Place		180 feet southerly	_	35	ff fr	ě	line.
Exchange	• • • • • • • • • • • • • • • • • • • •	Jefferson	_		峼	6	line.
Exchange	a	Michigan			بئ	ಠ	line.
Exchange		Heacock			یے	of n.	line.
Exchange	Jefferson	Heacock					
Ferry	Main	600 feet east of Jefferson.	_		ı,	of n.	line.
Fillmore avenue	Seneca	Peckham		_	ei.	of w.	
Folsom	Michigan	Chicago			25 ft. s.	of n.	
Folsom	Chicago	South Cedar		_	ë	of s.	
Folsom	South Cedar	Jefferson	_		ė	of s.	
Fox	Genesee	Sycamore			نه	of w.	
		Louisiana	_		ιά	of n.	
		L. S. & M. S. R. R	_		Ġ	of s.	
		320 feet northerly			3	of e.	
	South Michigan	1760 feet southerly	_		3	of e.	
	Michigan	640 feet northerly			3	of e.	
Genesee	Main	Oak	_		ś	õ	
Genesee.	Oak	Jefferson			ś	7	
Genesee	Jefferson	Best			ä	of s.	line.
George	Mortimer	Jefferson	4		Ġ	of s.	
German alley	Sycamore	Genesee	4		بر به	of ₩.	line.
Glenwood avenue	Main	Purdy					
Goodell	Main	Michigan	12		ft. s.	of n.	line.
Goodell	Michigan	Cherry		_	ft. n.	70	line.
Goodell alley	Tupper	Goodell	_		ff. e.	6	line.
Goodrich	Main	Michigan	9	<u> </u>	ft. n.	of s.	line.
Granger	Chicago	Ohio Basin Slip	4	_	ft s	7	line.
Grape	Cherry	Virginia	9	38	بر د	5	line.
Grape	High	Best	9		ا <u>ن</u> د اند	o o	line.

Schedule of 1	Water Pipe laid, giving	Schedule of Water Pipe laid, giving Location, Size of Pipe, and on what System.	d on what	System.	
Street.	From.	ß	D Pire C Pe o E e o System.	Location of Pipe.	Pipe.
Green	Michigan	Beak	4	30 ft. n. of s.	line.
Grey	Broadway	Genesee	6 R	28 ft. w. of e.	
Hamburgh	Elk	Fulton	6 R	23 ft. w. of e.	
Hayward	Elk	Fulton	6 R	23 ft. e. of w.	
Hayward	Perry	250 feet northerly	9 8	18 ft. w. of e.	
Heacock	Seneca	Scott	4 3	20 ft. e. of W.	
Heacock	Exchange	Perry		18 ft. w. of e.	
Herman	Broadway	North.	_	30 ft. w. of e.	
Hickory	Cherry	Genesee	_	23 ft. e. of w	
Hickory	Genesee	Eagle	_	40 ft w. of e	
High	Main	Jefferson	H OI	28 ft. s. of n.	line.
High	. Jefferson	Grey	9 H	37 ft. n. of s.	
Hinckley	Spring	Mortimer	4 R	34 ft. s. of n.	
Hollister	Sping	Mortimer	6 R	16 ft. s. of n.	
Howard	Jefferson	. Madison	9 8	20 ft. s. of n.	
Howard	Monroe	Adams	9 R	15 ft. n. of s	
Howard	Madison	Monroe	4	16 ft. n. of s.	line.
Howard	Adams	Sherman	4 R	37 ft. s. of n	
Howard	. Madison	Metcalfe	36 R		
Howard	Sherman	Shumway	6 R	ø.	
Howard	Smith	Kaze	9	16 ft. n. of s.	line.
Howard	Shumway	Smith	4 8	eć.	. line.
Howard	Metcalfe	. Babcock	12 R	ø.	. line.
Howard	Metcalfe	425 feet westerly	4 R	33 ft. s. of n	line.
Indiana	Perry	Mary			:
Jefferson	Exchange	William	20 K	21 ft. e. of w. line	. Ine.

Parish P	Jefferson efferson effersor efferson effersor efferson effersor efferson ef	William 100 feet north of George. 100 feet north of George.	Sycamore	0 4 4 4 EXX			≽	e G	38 ft. w. of e. line.	:
Brown Virginia High Howard High Howard How	efferson	Davis	Brown	_		ني	, *	Ģ.	line	.:
Virginia High Rest 10 High Best 10 High 10	rfferson	Brown	Virginia	_		<u>ب</u>	ij	Ř.	line	.:
High Rest 10 H Best Ferry 16 H Broadway Ferry 16 H Broadway 425 feet northerly 4 R Cherry Cherry 6 K Washington Broadway 6 K William Howard 6 H Cherry North Masten 6 H Cherry Eagle 6 K Cherry Eagle Cherry 6 K Cherry Cherry Eagle 6 K Eagle Cherry Cherry 6 K Cherry Cherry Cherry 6 K Cherry Cherry		Virginia	High			<u>.</u>	ij	ě	Hipe	.:
Best Best Ferry 16 H	• • • • • • • • • • • • • • • • • • • •	High	Rest	임	- F	<u>ب</u>	`.	ž e	line	.:
Broadway North 6 R		Best	Ferry	91	43	<u>ب</u>		بر ج	Ë	.:
Sycamore 425 feet northerly 6 R Howard 425 feet southerly 6 R Washington Broadway 6 R Cherry North 6 R William North 6 R Michigan North 6 R Cherry North 6 R Cherry North 6 R Seneca Sherman 6 R Sensile Sherman 6 R Auley Hamburgh canal 6 R Broadway William 4 R Aunoisina Brown 6 R Broadway Hamburgh 6 R Clinton Howard 6 R Aunois Brown 6 R Brown Feether 6 R Clinton Prime 6 R Brown 6 R R <t< td=""><td>Johnson</td><td>Broadway.</td><td>North how</td><td>9</td><td>4</td><td>یے</td><td>`.</td><td>ير e</td><td>line</td><td>.:</td></t<>	Johnson	Broadway.	North how	9	4	یے	`.	ير e	line	.:
Genesee 425 feet southerly 6 R Howard 150 feet north of Lovejoy 6 R Cherry North Howard 6 H William Masten 6 H Cherry Clinton Eagle 6 R Seneral Chino Eagle 6 R Seneral Chino Chin	Kane	Sycamore	425 feet northerly	4		∞ α	ڙ نه ورند	<u>۾</u> ۾	.¥ .¥	ų į
Howard Iso feet north of Lovejoy 6 R R	Kane	Genesee	425 feet southerly	9	- H	یے	نه		ii.	į .
Cherry Washington Broadway 6 R 23 ft. e. of w.	Krettner	Howard	150 feet north of Lovejoy	9	3	يد	`.	of e.	line	
Cherry Cherry North 6 H 23 ft. e. of w.	Lafayette	Washington	Broadway	9						
William Howard 6 R 21 ft. e. of w. Michigan Masten 6 H 27 ft. e. of w. Chitton Eagle 6 R 28 ft. e. of w. Ia. Scherca 6 R 28 ft. w. of e. Ia. Exchange Ohio 10 R 27 ft. w. of e. Ia. Broadway William 6 R 25 ft. w. of e. Ia. Brown 6 R 25 ft. n. of s. 8 Inition Howard 6 R 56 ft. w. of e. Prime Clinton Brown 6 R 56 ft. w. of e. Prime Exchange 10 R 49 ft. w. of e. Brown 10 R 49 ft. w. of e. 14 ft. e. of w. Brown 12 R 49 ft. w. of e. 14 ft. e. of w.	Lemon	Cherry	North	9 H	23	<u>ب</u>	9	<u>ب</u>	line	
Michigan Masten 6 H 27 ft. s. of n.	Lewis.	William	Howard	9	7	یے	ij	₹.	ii.	.:
Cherry C	Laurel	Mıchigan	Masten	9	-	نے	si O	Ę.	<u>li</u>	.:
Clinton Eagle 6 R 28 ft. w. of e. Seneca	Locust	Cherry	North	9	<u>~</u>	تے		₩	line	.:
Seneca	Lord	Clinton	Eagle	9						
Exchange Ohio 10 R 27 ft. w. of e.	Louisiana	Seneca	Hamburgh canal	9		<u>ت</u>	`.	ž e.		.:
Emslie. Sherman 6 R II ft. e. of w.	Louisiana	Exchange	Ohio			Ë	≱	ير و		.:
Broadway William 4	Lovejoy	Emslie.	Sherman	9						
aw Louisiana. Hamburgh 6 R 25 ft. n. of s. n Eagle Brown 6 R 21 ft. w. of e. Clinton Howard 36 R 21 ft. w. of e. Ohio Prime. 10 R 49 ft. w. of e. Exchange North Division Goodell 12 R 48 ft. w. of e. Goodell Allen 16 H 47 ft. e. of w.	Lutheran alley	Broadway	William	_		نے	ij	É.	line	.:
Eagle Brown 6 R 21 ft. w. of e.	Mackinaw	Louisiana	Hamburgh	_		بي	ä	ڪر بع	<u>li</u>	.:
Clinton Howard 36 R 50 ft. w. of e.	Madison	Eagle	Brown	_		یے	`.	بر و	line	٠.
Ohio Prime 6 R 50 ft. w. of e.	Madison	Clinton	Howard	_						
Prime. Exchange 10 R 49 ft. w. of e.	Main	Ohio	Prime			یے	ě	ğ.	ij.	.:
Exchange North Division 12 R 49 ft. w. of e. North Division Goodell 12 H 48 ft. w. of e. Goodell Allen 16 H 47 ft. e. of w.	Main	Prime	Exchange	_		Ä	Š.	نو	line	.:
North Division Goodell 12 H 48 ft. w. of e. Goodell 16 H 47 ft. e. of w.	Main	Exchange	North Division			<u>ج</u>	`.	ë ë	Ë	.:
ll	Main	North Division	Goodell	_		یے		ب و	E E	
	Main	Goodell	Allen	16 H	47	ین	ن	ſw.	line	

Street.	From.	ê	Size of Pipe. Inches	System.	3	Location of Pipe,	Pipe,
Main	Allen	Ferry	. 8	ж	33 ft.	w. of	
Main Maple	Cherry	South line of Poorhouse lot Virginia	9 0	4	26 FF.	¥. of	e. e.
Maple	Virginia	North	9		28 ft.	e. of	
Mark	William	Gay	44		24 ft.	w. of	
Masten	Ferry	Greenwood avenue		: ::	1. 1. 1.		
Mathews alley.	Tefferson	Mortimer	4	2	12 ft	n. of	
Metcalfe	Howard	William	36.	~			
Metcalfe	Howard.	William	9	2	33 ft.	33 ft. w. of e.	. line.
Miami	Louisiana	Hamburgh	9	~	18 ft.	s. of r	. line
Miami	Ohio	Chicago	91	~ (,	•	:
Michigan	Ohio	Genesee	2	× ,	28 ft.	o.	e. : Ine
Michigan	Genesee		12	Υ:	24 ft.	ij	
Michigan	120 feet north of Goodell		•	Ξ:	27 ft.	e. of w.	
Michigan	High	Best	2 ·		32 ft.	e. of w.	
Michigan	Best	Ferry	•		42 ft.	w. of	
Milnor	Broadway	William	•	_	30 ft.	w. of	e. line
Mississippi	Onlo	Mary Mary	4 0	4 24			
Mississippi	Marv	140 feet north of Perry	. 4	~			
Mohawk	Washington		•	~	31 ft.	n. of	s. line
Monroe	Clinton	Brown	9	~	34 ft.	w. of	e. line
Mortimer	, Cherry	Broadway	9	~	32 ft.	š	: line
Mortimer	W:11:	the fact march of Dealtham		•	•	•	

Mulberry	High	300 feet northerly	9	H 127	<u>:</u> :	0	of w.	line.
North	Nain	Michigan	4 <		<u> </u>	, o		
North		Orange.	9	H 30	ے :	i si		ine.
North Division	:	Cedar.	4	_	Ë	o.		line.
North Division		N. Y. C. & H. R. R. R	9		یے	o.		line.
Oak	on	Broadway	4		نے	¥. O		line.
Oak		Sycamore	9					
Oak		Tupper	4	_	نے	ğ		line.
Oak		Tupper	12		۳	O		ine.
Oak	Tupper	Goodell	9	H 13	ین	¥. of	of e.	line.
Oak		Virginia.	4	H 25	بے	, of		line.
Oak		Hish	_	_	نے	. of		line.
Oak		Best			نے	×. o		line.
Ohio.		Elk		-				
Ohio		800 feet south of Chicago.		R to	<u>.</u>	ft. n. of s.	Ś	line.
Ohio.		Columbia		-				
Oneida	Emslie	Smith			۳	o.	'n	ine.
Orange	Cherry	High	٥	H 25	ي	e. of w.		line.
	Elk	350 feet southerly	_	_	₽	of of	`.	ine.
	Cherry	Carlton			نع	٠. و	نه	line.
	Carlton.	High			☱	٠ و	`.	ine.
	North.	Best			#	٠. م	ij	ine.
Peckham	Jefferson	Fillmore ave	_		Ë	م	'n	ine.
Perry	Main	Mississippi						
Perry	Columbia	Michigan		-	نے	ō	ë	ine.
Perry	Marvin	Heacock	-	_	۳	۶. م	s,	ine.
Pine	Eagle	William	_		ı	v. o	ij	ine.
Pine	William	Sycamore			¥	v. of	ij	ine.
Potter	William	Broadway	_		₽	٠. م	`.	ine.
Pratt	Clinton	William		R 37	ı.	. w. of e.	ij	line.
Pratt.	Eagle	Clinton	•	R 25	ت	<u>.</u>		ine.

what System.	System.	6 H 27 ft. e. of w. line. 114 R 16 ft. e. of w. line. 6 H 17 ft. e. of w. line. 6 H 17 ft. e. of w. line. 7 H 17 ft. s. of n. line. 8 H 28 ft. e. of w. line. 6 H 36 ft. e. of w. line. 6 H 36 ft. e. of w. line. 6 H 36 ft. e. of w. line. 6 H 22 ft. n. of s. line. 6 R 22 ft. n. of s. line. 6 R 22 ft. s. of n. line. 6 R 24 ft. n. of s. line. 6 R 24 ft. n. of s. line. 6 R 24 ft. n. of s. line.
d on	Size of Pipe. Inches.	0 0 4 H 0 0 0 4 H 4 0 4 0 0 0 4 0 0 0 0
Schedule of Water Pipe laid, giving Location, Size of Pipe, and on what System.	G	Genesee. Jefferson Virginia. 200 feet southerly Fulton. 450 feet west of Michigan. Carlton Illinois Chicago. S20 feet easterly 520 feet easterly 450 feet south of Exchange Perry Washington. North Hagerman. North Peckham Elk. Seneca Ohio. Swan Michigan. Ccdar. N. Y. C. R. R. N. Y. C. R. R.
ater Pipe laid, giving L	From	William Main. Burton alley. Burton alley Villiam Perry Masten Virginia. Main. Michigan Michigan Michigan Michigan Michigan Michigan Michigan Michigan Main. Emsile Iloward William Main. Eusile Louisiana Seneca Eik Louisiana Seneca Main Michigan Cedar Emsile
Schedule of W	Street.	Pratt. Puffer Ralph alley Randall. Red Jacket Riley Scott.

Spring Spring Spring	Genesee Broadway William	Broadway William Clinton Fine	400. XXX	39 ft. e. of w 39 ft. w. of e. 40 ft. e. of w.	Hine.
		Droadway	_	35 ft. w.	
		Peckham	_	31 ft. w. of	
		Broadway	-	18 ft. w. of	
	Spring	Job leet easteriy		22 ft.	line.
• • • • • • • • • • • • • • • • • • • •		Ellicott		27 ft. s. of	
		Cedar		26 ft. n. of	
Swan	Cedar	Seneca		39 ft. s.	line.
Sycamore	:::::::::::::::::::::::::::::::::::::::	Spring		42 ft. n. of	≓
Sycamore	Spring	Jefferson	4 R	4 ft. s. of	n. line line
Sycamore	[efferson	Beckwith	_	i :	
		Johnson		41 ft.	line.
		Washington		2. F.	line.
		Michigan		16 ft.	line.
Tupper		Michigan		17 ft.	line.
I ousey		Champlin		25 11.	
		William	+ 9	17 ft. w. of e.	line.
		Jefferson.		26 ft.	line.
٩		Porter		20 ft.	line.
Virginia		Cherry		23 ft.	line.
Virginia		Rose		4 F	ine:
Walnut		Eagle		40 ft.	line.
Washington	Onto	I upper	_	41 11.	: E:
Washington		Exchange	_	20°	line:
Washington	Exchange	Genesee		38 It. e. of	
washington	I upper	Soo leet southerly	-:	-	ine.

t System.
e, and on what System
and
Pipe
of
, Size of Pipe,
Pipe laid, giving Location,
giving
e laid,
Pip
Water
Schedule of Water
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Location of Pipe.	!	39 ft. w. of e. line.	1 38 ft. w. of e. line.	25 ft. w. of e. line.	Is ft. e. of w. line.		R 27 ft. e. of w. line.		27 ft. s. of n. line.	30 ft. n. of s. line.	42 ft. s. of n. line.	· ~	R 32 ft. s. of n. line.	<u>.</u>	40 ft. s. of n. line.	1 42 ft. e. of w. line.
Size of Pipe, Inches.		9	9	9	9	9	4	2	2	9	20 F	9	1 01	4	12	12 F
To.		. 350 feet northerly	High	Perry	Broadway	R. R. avenue.	Exchange	. 450 feet northerly	Pratt	. 122 feet east of Madison	Adams	766 feet easterly	N. Y. C. R. R.	Indian Reservation Line	. Williamsville Road	1.275 ft. north of Broadway
From.		Tupper	•	Elk	• • • • • • • • • • • • • • • • • • • •	Ferry	Seneca		Michigan		Jefferson	Emslie	:	N. Y. C. R. R		:
Street,		Washington	Washington	Walter	Watson	Waverley	Wells	West Bennett	William	William	William	William	William	William	William	Williamsville road

Schedule of Water Pipe laid, giving Location, Size of Pipe, and on what System.

WEST SIDE.

System Location of Pipe.	, x	Ξ	×	H	H 21 ft e of w line.	H 27 ft e of w line	R 27 st sof n line	- Н - 9	R 5 ft w of e line.	24	5 R 24 ft s of n line.	5 R 43 ft s of n line.	5 H 32 ft w of e line.	5 R 25 ft s of n line.	R 29 ft s of n line.	5 R 25 ft s of n line.	P H 9	H 9	-	6 H 39 ft s of n line.		4 R 41 ft sof n line.		6 R		6 R II steof w line.
Size of pipe. Inches	. v	77	••	_		_	4	_		_	_		<u> </u>		-	-:	- -	٠.						-		-··.
Si	West avenue	Wadsworth	Military road	830 feet southerly	370 feet southerly	559 feet northerly	Gelston	Michigan	120 feet southerly	170 feet southerly			Rhode Island	. West avenue	. Dewitt	Barton	_		. 210 feet easterly	Delaware avenue	. Commercial				Lot line bet. lots 171 & 172 280 feet west of Morgan	Soldiers' Place Delavan avenue
From.	Niagera	Main	Niagara	Bryant	Ferry	Ferry	West avenue	Main	Breckenridge	Huron	West avenue	Niagara	Vermont	Niagara	West avenue	DeWitt.	Linwood avenue	Elmwood avenue	Richmond avenue	Richmond avenue	Erie			Prospect avenue	_	٠,
	-	_			:		:	:	:	:	:		:	- :	:	:	:									
Strøet.	Albany	Allen	Amherst	Ashland avenue	Ashland avenue	Ashland avenue	Auburn avenue	Balcom	Barton	Bean alley	Bird avenue	Bouck avenue	Brayton	Breckenridge	Breckenridge	Breckenridge	Bryant	Bryant	Bryant	Butler	Canal	Carolina	Carolina.	Carolina	Cary	Chapin Parkway

Schedule of Water Pipe laid, giving Location, Size of Pipe, and on what System.

System. System.	6 R 36 ft e of w line. 6 H 16 ft w of e line. 6 H 31 ft e of w line. 70 H 27 ft s of n line. 10 H 38 ft s of n line. 10 H 30 ft n of s line. 6 R 20 ft s of n line. 6 R 36 ft e of w line. 6 R 36 ft e of w line. 6 R 10 ft n of s line. 70 H 36 ft w of e line. 71 H 36 ft w of e line. 72 H 10 ft w of e line. 73 H 10 ft w of e line. 74 R 20 ft s of n line. 75 H 36 ft w of e line. 76 H 16 ft w of e line.
Size of Pipe. Inches.	
To	Franklin Franklin Franklin Cottage Cottage Cottage North Nortis Place North Prospect avenue Richmond avenue Pearl Pearl Pearl Georgia Georgia Georgia Georgia Georgia Bradley Niagara Niagara Niagara North Sof feet north of Ferry 775 feet north of Ferry Viginia
From,	
Street.	Chenango Chippewa Chippewa Chippewa Clifton place College. Commercial Connecticut Contrage Court

Dewitt	Breckenridge	400 feet northerly	44	**	43 ft w of e line. 19 ft w of e line.	jo w	e e	ë ë
Eagle	Main.	Pearl	۰ و	Ξ 2	ý	,	=======================================	9
Fage Factors	Parish	Farmer	1 9	4 04	30 ft e of w line.	0 0	:: : ≥	و و
Edward	Virginia	220 ft. e. of Delaware ave.	7	=		;		
Efner	Georgia	300 feet northerly	•		19 ft e of w line.	e of	: ×	မွ
Efner	Carolina	Maryland	4		32 ft	w of	.E	ě
Eighteenth	Connecticut	Vermont.	9		21 ft	w of	ت ⊒	ë
Eighteenth	Rhode Island	Massachusetts	9		32 ft	e of	ii A	ë
Elmwood avenue	Hodge avenue	200 feet northerly	9					
Erie	Main	Terrace	9	H	31 ft n of s line.	o u	S	ë.
Erie	Тептасе	Water	9	*				
Erie	Water	Buffalo River	4	~				
Express	Pearl	125 feet westerly	9					
Fargo avenue	Connecticut	270 feet southerly	4	_	10 ft	e of	Æ ¥	line.
Fargo avenue	Connecticut	Hampshire	9		38 ft	JO M	e E	line.
Fargo avenue	Hampshire	Niagara	9		38 ft	w of	ē	line.
Fargo avenue	Hudson	Pennsylvania	9		40 ft e of w l	e of	Æ æ	line.
Fargo avenue	Jersey	Porter avenue	9		23 ft	yo w	:≡ o	line.
Farmer	Niagara	Gurnsey	9		20 ft	n of	S	line.
Ferry	Erie Canal	Niagara	4					
Ferry	Gelston	Richmond avenue	9		40 ft	s of	Ξ	ĕ
Ferry	Main	Richmond avenue	12	H	55 ft	o u	S	ĕ
Fifteenth	York	Vermont.	9	H	41 ft e of w line.	e of	Ξ	ĕ
Fifth	Court	Pennsylvania	9	~ ~	34 ft	w of	e E	ĕ
Fly	State	Maiden Lane	4	×				
Forest avenue	Erie Canal	Niagara	4	~				
Forest avenue	Niagara	West avenue	91	×				
Forest avenue	West avenue	Lincoln parkway	12	<u>~</u>	40 ft s of n line.	s of	Ē	ä
Fourteenth	Pennsylvania	Porter avenue	77	H:	•	٠	:	
Fourteenth	Porter avenue	500 ft. north of York	•	Ξ	25 ft e of w line	e 0	= *	ä
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Schedule of W.	Schedule of Water Pipe laid, giving Location, Size of Pipe, and on what System.	ration, Size of Pipe, and	d on wha	14 Sys	stem.	
Street.	From.	ot.	Size of Pipe. Inches.	System,	Location of Pipe.	Pipe.
Fourteenth	Connecticut	130 feet southerly		. E	21 ft e of w	line.
Fourteenth	Connecticut	Rhode Island	9	77 H	24 ft e of w line.	line.
Fourteenth	Rhode Island	Hampshire.	9	~ ~	38 ft w of e line	line.
Fourth	Carclina.	430 feet northerly	44	 2 &		
Franklin.	Terrace	Swan	4	H	24 ft e of w line.	line.
Franklin	Swan	Eagle	9	_ #:	_	
Franklin.	Eagle.		4		,	
Franklin	Chippewa	500 feet northerly	9	Αt -	41 ft e of w line.	line.
Franklin	500 feet north of Chippewa. Tupper	Tupper	4			-
Franklin.	1 upper	North	0 4	~ :	38 it e of w line.	ine.
Fremont place	, irginia	Tour Distriction	0	ლ ⊑ -	30 It e of w line	ııne.
Front avenue.	Rhode Island 216 ft. south	216 ft. south of Connecticut	0 9	~ — ⊻ ¥	30 ft w of e line.	line.
Front avenue	Stand Pipe	Niagara.	91	_		
Gelston	Fепту	250 ft. n. of Breckenridge	4		36 ft w of e line.	line.
Genesee	Main	Pearl	4	 I (
Genesee	Pearl	Niagara	4,			
(enesee	Niagara	East line of C. K. K.	6 V	¥ 0		
Ceorgia	Nisgers	Civeth	•	۷ ۵		
Georgia	Sixth	Court	4-0	. A	28 ft n of s line.	line.
Georgia	Court	C. R. R. Round house				
Hamilton	East	50 feet east of Thompson	•	_	30 ft s of n line.	line.
Hampshire	Prospect avenue	Plymouth avenue	- -	ന് - ⊻≃	38 it s of n line	line.
			*	•		

Henry	Terrace	Erie canal.	6 H H	24 ft s of n line.
Howard avenue	Bryant	Summer	H 9	44 ft w of e line.
Hudson	Niagara	West avenue	IO R	24 ft s of n line.
Hudson	West avenue	Cottage	H 01	42 ft n of s line.
Hudson	Cottage	Wadsworth		42 ft n of s
Hudson	Sixth	Erie canal	4	
Huron	Franklin	Delaware avenue		
Huron	Delaware avenue	Prospect avenue	6 R	
Irving place	Allen	North	H 9	
Jackson	Genesee	Court place	4 R	
Jersey	Prospect avenue	West avenue		
Jersey.	West avenue	Richmond avenue.		
Jersey	Fourteenth	200 feet northerly	H 9	-
John	Seneca	Pearl	4 H	to ft e of w line.
Johnson place	Delaware avenue	Carolina		
Ketchum place	Jersey	Vork		35 ft w of e line.
Lake	Commercial	60 feet easterly	4 	
Lake View avenue	:	Porter avenue		40 ft e of w line.
Lincoln parkway	:	South line of Park		
Linwood avenue	:	Fелту		
Loyd	Main	South end of Bridge	4 R	
Loyd	South end of Bridge	Prime		
Mariner	Virginia	North		30 ft e of w line.
Maryland	Seventh	100 feet west of Fourth	•	29 ft n of s line.
Maryland	West avenue	Twelfth	6 R	4r ft s of n line.
Maryland	Cottage	College	H 9	30 ft s of n line.
Maryland	Niagara	Seventh		
Massachusetts	Seventh	Niagara	% %	q
Massachusetts	Niagara	Prospect avenue	9	=
Massachusetts	Prospect avenue	Fargo avenue	H 9	40 ft s of n line.
Massachusetts	Plymouth avenue	Fourteenth	6 R	38 ft s of n line.

Cucken	3)36676.
bankat.	מיתוחו
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D.A.	r eye,
Cir. of Dis.	מיני מי
T. Section 2	7 X1151X
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nut System.	System.	R 34 ft n of s line. R 35 ft w of e line. R 41 ft w of e line. R 26 ft e of w line. H 20 ft w of e line. R 20 ft w of e line. R 19 ft w of e line. R 39 ft w of e line. R 39 ft w of e line. H 31 ft n of s line. R 42 ft w of e line. R 42 ft w of e line. R 43 ft w of e line. R 39 ft w of e line. R 39 ft w of e line. R 42 ft w of e line. R 39 ft w of e line. R 42 ft w of e line. R 42 ft w of e line. R 42 ft w of e line. R 43 ft w of e line. R 58 ft e of w line. R 78 ft w of w line.
מש מה	Size of Pipe. Inches.	400 4446 400 6 44446000 4 600 60 4
Sincamic of waith I we tuin, groing Location, Size of I ipe, and on under System.	Ç	350 feet westerly. 300 feet northerly. Niagara 150 feet westerly. Mohawk. Eagle. 250 ft. north of Connecticut. Rhode Island. Massachusetts Forest avenue. Breckenridge. Forest avenue. 300 feet northerly. Forest avenue. Anish. 300 feet southerly. Forest avenue. Parish. 300 feet southerly. Forest avenue. North. Porter avenue. North. Peacock. East. North.
aier I ipe iaiu, groing 1	From.	Terrace Balcom Main. Niagara. Chippewa. Niagara. Chippewa. Niagara. So ft. north of Connecticut. Connecticut. Massachusetts Front avenue. Bouck avenue. Forest avenue. Forest avenue. Rhode Island Cottage. Main. Virginia Virginia Delaware avenue.
Al la simmanic	Street.	Mechanic Michigan Mohawk Mohawk Morgan Morgan Niagara

Pearl Terrace Pearl Count Court Virginia Pennsylvania Prospect avenue Promouth avenue Promouth avenue Prospect avenue Courte avenue Courte avenue Sixth Prospect avenue Sixth Porter avenue Sixth Porter avenue Sixth Porter avenue Sixth Porter avenue Prospect avenue Porter avenue	Court. 200 feet northerly Genesee. Genesee. Tupper 250 feet southerly 175 feet west of Fourth 150 feet easterly Plymouth avenue. 150 feet east of 13th. 24 250 feet westerly. 250 feet westerly. 61 250 feet westerly. 62 630 feet westerly. 63 6159	======================================	40 ft w of e line. 29 ft e of w line. 24 ft n of s line. 25 ft n of s line. 38 ft w of e line. 41 ft w of e line.
nne. une.	Genesee Tupper Tupper Tupper Typer Typer		29 ft e of w line. 24 ft n of s line. 25 ft n of s line. 25 ft e of w line. 38 ft w of e line. 41 ft w of e line.
nne. une. une.	250 feet southerly. 175 feet west of Fourth 150 feet easterly. 150 feet easterly. 150 feet east of 13th. 240 Wadsworth 250 feet westerly. 1550 feet westerly. 16759		24 ft n of s line. 25 ft n of s line. 25 ft e of w line. 38 ft w of e line. 41 ft w of e line.
nne. une.	175 feet west of Fourth 150 feet easterly 150 feet easterly 150 feet east of 13th 150 feet east of 3th 250 feet westerly 250 feet westerly 161559		24 ft n of s line. 25 ft n of s line. 25 ft e of w line. 38 ft w of e line. 41 ft w of e line.
	150 feet easterly. Plymouth avenue. Plymouth avenue. Co feet east of 13th. 24 250 feet westerly. Fersey. Connecticut. Fersey.		25 ft n of s line. 25 ft e of w line. 38 ft w of e line. 41 ft w of e line.
	Plymouth avenue. Iso feet east of 13th. Wadsworth 24 250 feet westerly. Jersey. Rhode Island.	•-	25 ft n of s line. 25 ft e of w line. 38 ft w of e line. 41 ft w of e line.
	150 feet east of 13th 24 Wadsworth 24 250 feet westerly 3 Jersey 6 Connecticut 16 Rhode Island 6		25 ft n of s line. 25 ft e of w line. 38 ft w of e line. 41 tt w of e line.
	Wadsworth 24 250 feet westerly 3 Jersey 6 Connecticut 16		25 ft e of w line. 38 ft w of e line. 41 tt w of e line.
	250 feet westerly.	×HEH&	25 ft e of w line. 38 ft w of e line. 41 ft w of e line.
	Jersey. Connecticut	HEHM	25 ft e of w line. 38 ft w of e line. 41 ft w of e line.
	Connecticut.	ΞΞ«	38 ft w of e line. 41 ft w of e line.
	Rhode Island	Ξæ	41 ft w of e line.
		×	
	Massachusetts 6	:	25 ft e of w line.
	200 feet west of Fourth	×	21 ft n of s line.
	Seventh 6	×	
	Prospect avenue 6	Ħ	
	West avenue 20	H	
		Ξ	8 ft n of s line.
	West avenue 24	~	
Porter avenue Fourteenth	The Circle 12	Ξ	
Prime	Hanover 4	2	
Prospect avenue Huron	Hudson 6	~	38 ft e of w line.
prospect avenue Hudson	Porter avenue 6	H	25 ft w of e line.
Prospect avenue Porter avenue		_	
Prospect avenue Porter avenue	Connecticut 20	Ξ	
	Vermont 4	Ή	17 ft w of e line.
Prospect avenue Vermont	Niagara 6	_	42 ft w of e line.
enfield West avenue	250 feet westerly 6		25 ft s of n line.

System.
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Pipe,
size of Pipe
ation,
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Pipe 1
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Schedule

!	Location of Pipe.	13 ft s of n line.	25 ft n of s line.	16 ft e of w line.	39 ft s of n line.	`	on to a of m line	-	-	40 ft w of e		I 12 ft e of w line.		33 ft w of e line.		24 ft w of e line.			1 32 ft s of n line.	[44 ft n of s line.		. 25 ft w of e line.	AT IT DO OF US line
1	g n g 	4-0 	9	ნ. 	- 4	9 9	9 4	36 c		6 R	-		_	Ξ p	ΣΤ - 9	6 R			4	9	# - 9	6 - R	<u>α</u>
İ	Size of Pipe. Inches.	··	. -		.		- -	···.			-		-	<u>.</u>	-	-		-	- .		-		-
•	To.	Fourteenth	Richmond avenue	Forest avenue	Franklin.	100 feet westerly	Prospect avenue	Massachusetts	Georgia	Porter avenue	Vermont	Rhode Island	Massachusetts	Massachusetts	Vermont	Carolina	Porter avenue	Water	225 feet westerly	Howard avenue.	Pearl	Hudson	Senece
9	From.	Jersey Sixth	Prospect avenue	Jersey	Main	Main	Fargo avenue	Court	Wilkeson	Georgia	Porter avenue	Vermont	Vermont	Khode Island	Vork	Court	Court	Canal	Wadsworth	Main		Carolina	
	Street.	Public AlleyRhode Island.	Rhode Island	Richmond avenue	Seneca	Seneca	School	Seventh	Seventh	Seventh	Seventh	Seventh	Seventh	Seventh	Sixteenth	Sixth	Sixth.	State	St. John's Place	Summer	Swan	Tenth	Terrace, lower

Terrace, lower	Court	Mechanic	6 R	26 ft e of w line
Terrace, upper	Seneca	Main		
Terrace, upper	Pearl	Main	6 R	
	Eagle	Daw alley	-	13 ft w of e line,
Terrace	Franklin	Evans	-	
Thirteenth	Pennsylvania	Jersey	H 9	38 ft w of e
Thirteenth	Vork	390 feet southerly	4 H	13 ft e of w
Thirteenth	York	Rhode Island	9 H	
Thirteenth	Rhode Island	Massachusetts	9	44 ft wof e
Tonawanda	Amherst	500 feet southerly	4	22 ft w of e line.
Tracy	Delaware avenue	Carolina	4 R	
Tupper	Main	Virginia	20 R	21 ft s of n line.
Tupper	Delaware avenue	500 feet westerly	4 H	33 ft s of n line.
Twelfth	Virginia	Maryland.	H 9	
Utica	Main	Linwood avenue	H 9	
Utica	Linwood avenue	Delaware avenue	4 H	
Utica	Delaware avenue	160 feet west of Elmwood	H 9	19 ft n of s line.
U-ica	Elmwood avenue	125 feet westerly	4 H	•
Vermont.	Richmond avenue	West avenue	H 9	80
Vermont.	West avenue	Niagara	16 H	57 ft s of n line.
Vermont	Prospect avenue	Seventh	24 R	
Vermont	Seventh	Front avenue		
Vermont	Seventh	Front avenue	3 H	52 ft s of n line.
Vermont	Niagara	Seventh		
Vermont	Niagara	Seventh	4 H	g
Virginia	Cottage	Tupper	H 9	39 ft s of n line.
Virginia	Cottage	Franklin	H oı	
Virginia	Tupper	West avenue	8	60
Virginia.	West avenue	Prospect avenue	6 R	39 ft n of s line.
Virginia	Seventh	Sixth	9	a
Wadsworth	Allen	Pennsylvania.	24 H	ø
Wadsworth Place	College	Wadsworth Park	H 9	

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Schedule of W	Schedule of Water Pipe laid, giving Location, size of Pipe, and on what System.	ication, size of Pipe, and	on wha	t System	
Street,	From.	17.0	Size of Pipe. Inches.	System.	Location of Pipe.
Water	Commercial	Norton	9	- x	
West avenue	Carolina	Virginia	9		26 ft w of e line.
West avenue	Virginia	Porter avenue	8	R 39 fi	39 ft e of w line.
West avenue		Connecticut	4-0		t w of e line.
West avenue		Vermont.	91		26 ft e of w line.
West avenue		Breckenridge	9		t e of w line.
		Forest avenue	91		t e of w line.
Whitney Place		Carolina	4	R 24 ft	24 ft w of e line.
	•••••••••••••••••••••••••••••••••••••••	Hudson	•		te of w line.
Wilkeson		Sixth	01		s of n line.
Wilkeson	:	Seventh	4		n of s line.
Y or k		Richmond avenue	٠.	_	42 ft a of n line

PUMPING DEPARTMENT. 1884.

PARTY AND PROPERTY OF THE PROP

PUMPING DEPARTMENT.

Pumping Engines and their Capacity per 24 Hours.

I. Lower House.

Engine	No.	I,	Worthington	 10,000,000	gallons.
66	64	2,	"	 15,000,000	"
"	"	3,	46	 15,000,000	"

II. Upper House (Distributing.)

		,	· ,
Engin	e No. 2,	Holly	6,000,000 gallons.
"	" I,	" Reserve	3,000,000 "
Water	pumped	1884	8,789,971,200 "
"	66	1883	8,568,445,200 "
]	Increase.	1884	

DAILY SUPPLY.

The average daily supply for the year 1884 was twenty-four million eighty-two thousand one hundred and twelve gallons, an increase of six hundred and six thousand nine hundred and twenty gallons over the previous year. On the following days the greatest and least amounts were pumped:

GREATEST AMOUNTS PUMPED.

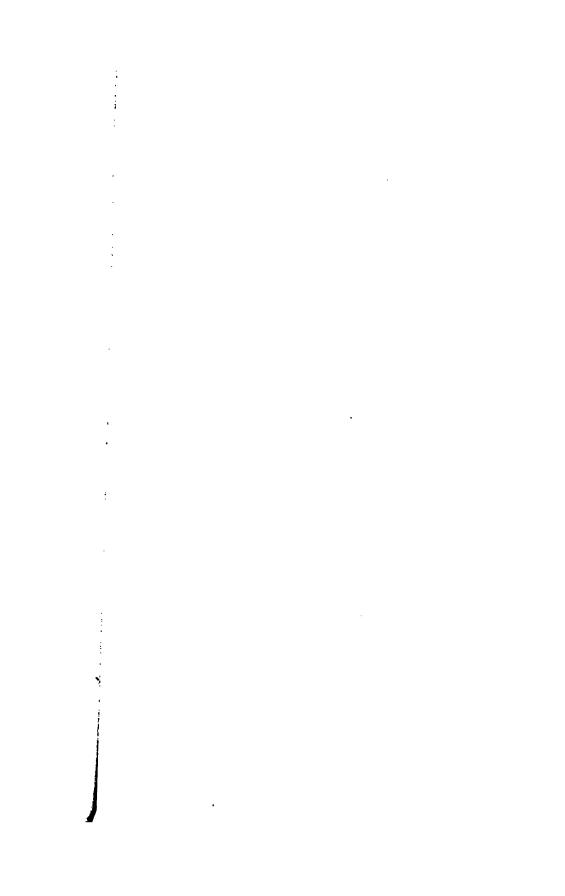
Friday, January 25, 1884	34,068,600	gallons.
Friday, February 29, 1884	34,335,000	"
Saturday, December 20, 1884	33,278,900	"

SIXTEENTH ANNUAL REPORT OF

138

LEAST AMOUNTS PUMPED.

Sunday,	April	27,	1884	16,863,4 0 0	gallons
Sunday,	May	18,	1884	17,299,400	"
Thursda	y, Jun	ne 5,	, 1884	18,230,900	66





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THE FOLLOWING GIVES NAMES OF ALL REGULAR EMPLOYES AND THE WAGES PAID EACH ON DEC. 31, 1884.

Board of Water Commissioners.

•		
	Per Annum.	
Louis P. Reichert, President		\$2.00
James Ryan, Secretary		2.00
George W. Miller		2.00
•		
Superintendent.		
Louis H. Knapp	\$2,500	
Office.		
John T. Rees, Registrar	1,500	
Gustavus C. Grimard, Cashier	1,200	
John Scanlon, Clerk	800	
Charles H. Bieber, Clerk	800	
Adelbert Hoestermann, Clerk	80 0	
Roy Crandall, Clerk	480	
Moritz Koenig, Draughtsman	800	
Ludovice Leitze, Draughtsman	600	
Edward J. Brady, Draughtsman	•	2,00
Garrett W. Doyle, Inspector		2.00
Robert Clarkson, Inspector		2.00
Dennis Ryan, Inspector		2.00
Andrew Fuller, Inspector		2.00
Isaac Hodge, Inspector		2.00
M. M. Hollenbeck, Inspector		2.00
Thomas H. Wilson, Inspector		2.00

Ephraim Funk, Inspector.....

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Patrick J. Quinn, Inspector		\$2,00
Patrick Ryan, Jr., Tapper		2.50
H. Kelley, Helper		1.75
Store House.		
James J. Collins, Foreman Repairs	\$1,200	
James Stratford, Store keeper	800	
Charles E. Richardson, Time keeper	• 900	
George Schneider, Plumber		2.00
John L. Fisher, Helper		1.75
Owen Ryan, Hostler	660	
James Delaney, Carpenter		1.75
Jacob Fisher, Teamster		1.75
J. J. Lanahan, Watchman		1.75
M. Heinold, Watchman		1.50
J. Pendergast, Repairer		2.25
P. Taughrin, Repairer		1.75
J. Higgins, Repairer		1.75
D. Cavany, Repairer		1.75
P. Winnehan, Repairer		1.75
Jacob Moest, Repairer		1.7
C. Prichard, Repairer		1.7
F. Kibler, Repairer		1.7
P. Madigan, Repairer		1.7
C. Flanagan		2.0
James Ryan		1.7
F. Schwartz		1.7
Patrick Ryan		1.7

Lower Pump House.

Dower 1 ump 110use.		
	Per Annum.	Per Day.
k Brennan, Engineer in charge	\$1,800	
Cameron, Engineer	1,100	
st A. Hoffman, Engineer	1,000	•
Hodgkins, Fireman		\$2.00
Coonly, Fireman		2.00
h M. Hickey, Fireman		2.00
m Abraham, Fireman		2.00
niel M. Hewett, Fireman		2.00
e Hart, Fireman		2.00
m Roach, Coal passer		1.50
k Mangan, Coal passer		1.50
rcoran, Coal passer		1.50
k Maher, Watchman Reservoir		1.25
Fisher, Watchman Reservoir		1.25
Griffin, Wiper		2.16
onway, Wiper		2.00
lein, Laborer		1.50
lliams, Laborer		1.50
ailey, Laborer		1.50
:Cue, Laborer		1.50
. Curry, Laborer		1.50
fferty, Laborer		1.50
Lanahan, Laborer		1.50
•		
Upper Pump House.		
Mullany, Engineer	1,000	
) Brown, Engineer	1,000	
el Victory, Fireman	780	
rd Hayes, Fireman	780	
s Cutler, Laborer		1.50
Tregilgus, Laborer		1.50
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Seventeenth Annual Report

Buffalo City Water Works

1885.

AX BUFFALO PUB. LIB'Y



SEVENTEENTH

ANNUAL REPORT

OF THE

Campliments of the

Buffalo Water Commissioners.

PLEASE EXCHANGE.

THE YEAR 1885.

BUFFAI,O:
HAAS & KLEIN, City Printers, 126 Seneca St.

1886

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SEVENTEENTH

ANNUAL REPORT

OF THE

BUFFALO CITY WATER WORKS

BUFFALO, NEW YORK,

FOR

THE YEAR 1885.

BUFFALO:
HAAS & KLEIN, City Printers, 126 Seneca St.

1886.

THE NEW YORK
PURELULIERARY

***TOR, LENOX AND
TOR, LENOX AND
TOR, LENOX AND
TOR FOUNDATIONS.
1899

OFFICERS--1885.

Board of Water Commissioners.

LOUIS P. REICHERT, Chairman.

JAMES RYAN, Secretary.

GEORGE W. MILLER, (Resigned Dec. 14th.)

S. K. WORTHINGTON.

Superintendent.

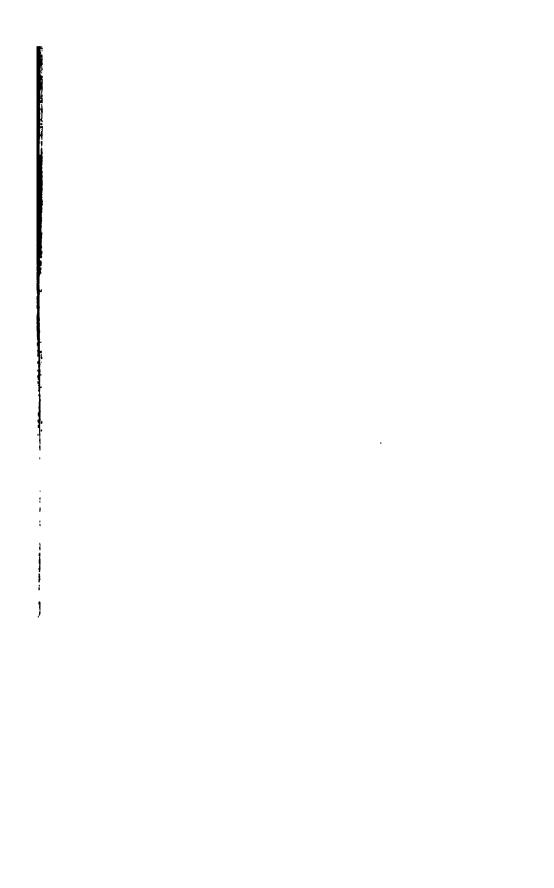
LOUIS H. KNAPP.

Office.

JOHN T. REES, Registrar. G. C. GRIMARD, Cashier. JOHN SCANLON, Clerk. CHAS. H. BIEBER, "A. HOESTERMANN, "ROY CRANDALL, "JAMES H. LEE, "

Chief Engineer.

PATRICK BRENNAN.



Commissioners' Report.

To the Honorable the Common Council of the City of Buffalo:

GENTLEMEN: In compliance with title fifteen, section number ten of the City Charter, we have the honor to herewith submit to you the Seventeenth Annual Report of the Buffalo City Water Works:

Mr. George W. Miller resigned as a member of the Board on the 14th of December last.

The vacancy thus created was filled by Mayor Scoville by the appointment of S. K. Worthington, Esq.

The works generally, are in good repair.

We anticipate no further trouble from fear of our water supply being contaminated from dredging dumped above the Inlet Pier, as this vexed question has been amicably settled, so that hereafter all dredging matter and refuse will be carried below our inlet.

During the early part of the year the department was greatly troubled by needle ice being drawn into and blocking the openings to the Inlet Pier in the river. The usual recourse when this had occurred during the previous years, was by opening the gates to old tunnel and valve to new tunnel at Bird Island Pier, taking water from this point while Inlet Pier was being cleared.

During the month of January last, the openings to the Inlet Pier were entirely closed by ice, and the openings to new and old tunnels at Bird Island Pier at same time were so effectually blocked by anchor ice, that water could not be taken at this point until a channel through the ice was blasted from the open water in the river to the openings on the pier.

The water supply being scant for two or three days. To guard against the reoccurrence of this difficulty, we have erected on the Inlet Pier, a suitable house where two men are stationed day and night during the season, for the purpose of preventing the accumulation of ice in the openings of the inlet.

The engineer at pumping station being at all times in direct communication with the men at inlet, by means of a code of signals adopted for their use, so that we are enabled to know the exact state of affairs at this important point.

We have expended \$4,416.58 in improving and repairing crib work, protecting the openings to the tunnels at Bird Island Pier, and trust that with improve-

ments made and precautions taken will prevent the reoccurrence of our last year's difficulty.

The total requirements of the department for the year, apart from making provisions for payment of the bonds falling due were:

Interest on Bonds	\$178,116.74
Maintenance and Repairs	92,438.30
Improvements and Extensions	332,392.16

There was ordered by your Honorable Body, 9 miles 1,966 feet of mains laid on streets where the revenue did not warrant the expenditure of the money necessary to do the work from the department revenue. To carry on this work you appropriated \$82,300.

All of this work was done, the cost of which was kept under the amount appropriated.

We sent to your Honorable Body under date of January 11, 1886, the following communication, and would again call your attention to clause therein, in regard to special appropriation for pipe laying, viz.:

We are not in favor of special appropriation for pipe laying by the Council, unless recommended by this Commission, as it is the desire of this Board to have this department fully self-sustaining and not tax our citizens for laying mains in parts of the city where no revenue is derived therefrom.

REVENUE.

The total amount received by the Water Department for the year ending December 31, 1885, was \$444,424.70. This is an increase over the previous year of \$61,843.06. This increase is in a measure due to the collection of the frontage tax; the exact amount realized from this source cannot be stated at this time, as there are balances to be rebated May next.

We believe that, notwithstanding the trouble and petty annoyances in the adjustment of this tax to our consumers, that it is for the interest of the department, and thereby indirectly an advantage to the tax-payer taking water.

During the year there was laid 9 miles 1,966 feet of pipe on special appropriation, where but very little revenue is derived. The property abutting upon the streets where mains are laid, should pay for the benefits derived, which can only be reached through the enforcement of the frontage tax.

WATER PIPES.

There was laid during the year 29 miles 2,746 feet of water pipes of various sizes at a cost of \$224,147,10 of which amount there was laid in the central and business portions of the city, 4 miles 1,008 feet of large mains, to replace the small pipes therein, at a cost of

\$50,310.77. This assures the territory bounded by Main, Michigan, Exchange and Genesee streets a water supply for manufacturing, domestic and fire purposes, equal to any of our sister cities. The total length of pipe in the city being 191 miles 830 feet.

The cost of laying mains for the year will compare favorably with same work during previous years, notwithstanding that all pipes were laid six feet deep, being one foot deeper than formerly.

Nearly all fire hydrants on new line of mains have connections for 4-inch suction in addition, and regular 2½ inch nozzels for hose connections. The hydrants being six feet in length, being one foot longer than formerly, made necessary to correspond with the pipe.

WATER DEBT.

There has been no change in amount of the water debt during the year. It remains the same as on January 1, 1885, \$2,828,382.

The 7 per cent bonds that fell due on July 1, were refunded at a lower rate of interest, 3½ per cent, and sold at a premium of \$6,138. There will become due during the coming year, \$150,000 of 7 per cent bonds,

We would recommend that they be refunded at a lower rate of interest.

NEW PUMPING ENGINE.

The new 15,000,000 gallon pumping engine under contract at the time of issuance of our last report, has been completed and is now doing service.

The trial test of this engine made under the supervision of John W. Hill, Master Engineer of Cincinnati, representing the city, a copy of his report to us is published herein, shows engine to be in all respects ahead of guarantees of the builders in contract. She is now being run on her final test of 1800 hours, as required by contract, and giving entire satisfaction thus far.

REPAIRS TO BUILDINGS,

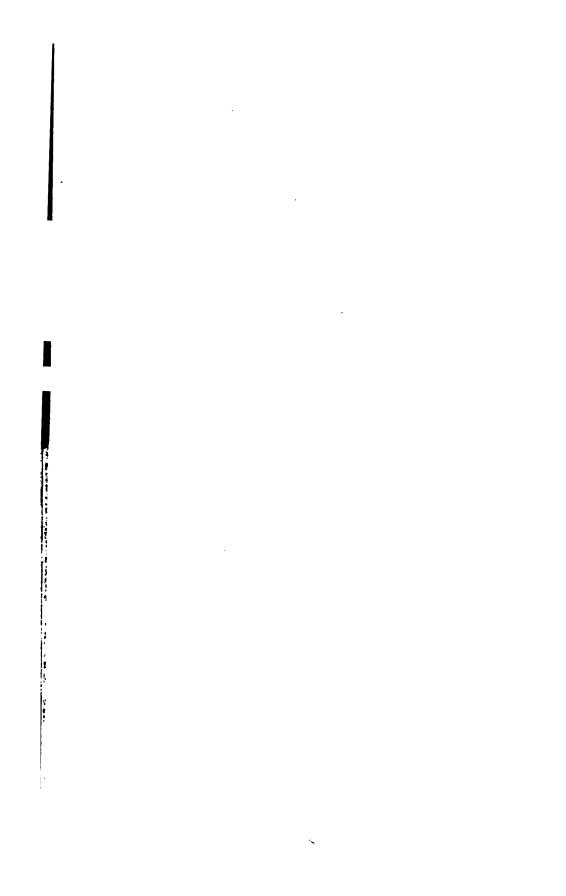
There was expended \$12,103.32 in making repairs to Lower Pumping House building, the repairs consisting of a new roof, new floor, with iron beams, cementing the cellar and repainting throughout; this building is now in excellent repair.

We have erected an overhead crossing over the railroad tracks, connecting the Pump House with roadway on the bank east of the building, thereby greatly facilitating reaching the station with safety. For a detailed statement of the condition of the works, the finances, construction, maintenance, etc., we refer you to the reports herewith of the officers of the respective departments.

Respectfully submitted,

L. P. REICHERT, JAMES RYAN, S. K. WORTHINGTON,

Water Commissioners.



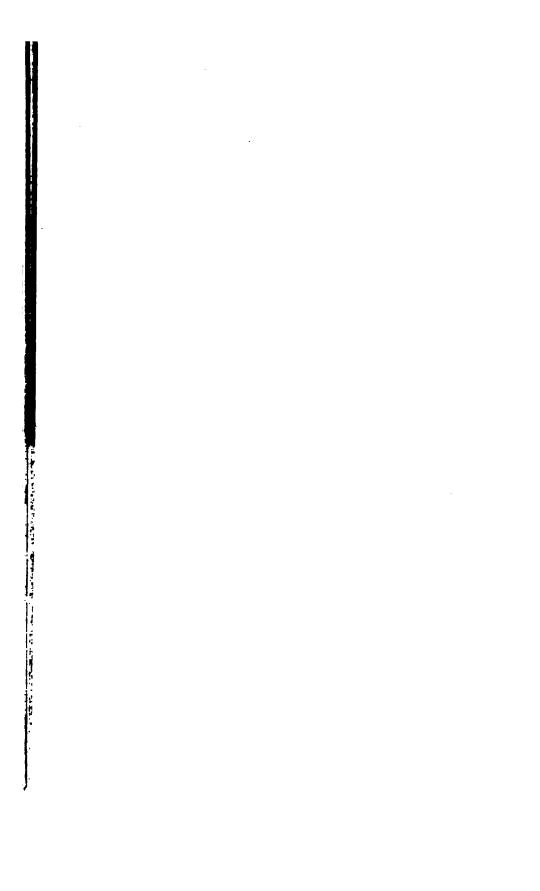
REPORT

OF THE

SUPERINTENDENT

FOR

1885.



BUFFALO CITY WATER WORKS.

SUPERINTENDENT'S OFFICE.

BUFFALO, January 1st, 1886.

To Louis P. Reichert, James Ryan and S. K. Worthington, Water Commissioners:

GENTLEMEN. I have the honor herewith to present the annual report, showing the operation of the department during the year ending December 31, 1885.

During the summer a substantial and permanent house has been constructed on the Inlet Pier, with accommodations for keeping men there during the winter to remove the ice from the shaft.

The Bird Island Pier openings to the old and new tunnels have been repaired and enlarged, and placed in good condition. A small amount of work is still required to complete the ice breaker, which, on account of the lateness of the season, was not finished. At the Engine House a new floor with iron beams, has been placed in the main engine room, and the cellar cemented. By removing a portion of the north wall, and putting in an iron girder, all the engines have been practically brought into one room and made much more pleasant. A new tin roof has been placed on the roof of the main building, and the space inside divided by a false ceiling. An overhead crossing has also been placed across the railroad track, making access to the Lower Engine House easy and safe.

Since the completion of the new engine the Upper Engine House has not been in use. This can be profitably and economically used to supply that part of the city above the contour line of 80, which at times is only partially supplied by the present system. The expense of this change can be met by the department. During the summer experiments were tried to ascertain the capacity of the old tunnel. It was found capable of delivering 50 million gallons per day, when the water in the river was at its average height.

Engine No. 1 is very much in need of a thorough repairing, and should be done at the earliest possible moment. Many reasonable complaints have been made of dirty water in different parts of the city and at times when the water in the river was clean. This is caused, in my opinion, by the increased velocity of the water

in the pipes, caused by an increased consumption, many of the old pipes have large amounts of deposit in them, before any marked improvement can be made in them, flushing branches must be placed in the pipes and connected with the sewers, and the pipes cleaned by discharging through the full size of the pipes into the sewer.

Provision cannot be made to soon for increasing the supply to both services. At present the reservior supply is limited to a 36 and 30-inch pipe, and the high service to a 20 and 16-inch pipe. In order to increase the supply to the former, a new engine and a separate 36-inch pipe laid from the engine house to the lower part of the city is required. To increase the latter, larger pipes are required. The scant supply of water east of Jefferson street, each year demonstrates more fully the wisdom of purchasing the land and the necessity of constructing the reservoir on the Dodge Farm. Increased office accommodations are much needed. Some good central site should be selected and the several branches of the department brought together.

There was laid during the year nearly 30 miles of pipe, one-third of which was in the central part of the city, in replacing the old pipe with larger ones. The high service was considerably increased by changing from the reservoir supply. The work of taking out old

hydrants and replacing them by new ones, has been continued, and the fire protection greatly improved thereby. Twelve experimental hydrants were placed in the central part of the city last summer, and were so constructed as to prevent them freezing, even when the frost is below the service pipe, 6 of them create a current by the waste of water, and 6 are provided with a double supply pipe and no waste of water takes place; so far they have not frozen, and answer every requirement.

The fire reservoirs have been by ordinance placed in charge of the department, and for their care and maintenance money should be provided. It seems to be one of the best methods of supplying water for fire purposes. Many of the present reservoirs are old and defective. An oval boiler-iron tank 12 x 14 feet and 7 to 8 feet deep, provided with two 20-inch man-holes placed at each end, supplied by a 6-inch pipe and overflow into the sewer will answer every requirement and do away with the annoyance and expense of keeping the present brick ones water tight.

There are 94 meters and 31 elevators in use. The amount of water supplied through them was 1,661,856,000 gallons. The revenue derived was \$52,067.07. The expense of maintenance was \$711.67. The total revenues for the year was \$444,440.77.

The total amount of water pumped was 10,441,393,-340 gallons. The average daily consumption was 28,-606,557 gallons.

The total expense of operating the works was \$92,-438.30.

The total amount expended on the extension account was \$332,392.16.

The amount received for meter water, including the 3-cent and 6-cent rate, was a little over \$52,000. If the remainder of the water was sold at 10 cents per 1,000 gallons, which would be one of the lowest rates for domestic consumers, the revenue of the department would be \$930,000, or more than double what was received showing how important it is to meter large consumers and preventing unnecessary waste.

The detail reports will fully explain the operations of the department.

LOUIS H. KNAPP,

Superintendent.



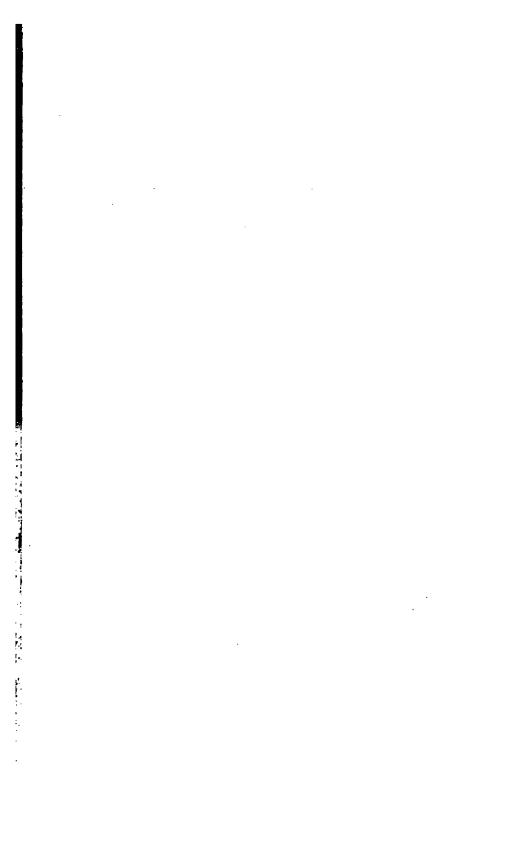
REPORT

OF THE

REGISTRAR

FOR

1885.



REGISTRAR'S OFFICE.

Buffalo, January 1st, 1886.

To Louis P. Reichert, James Ryan, S. K. Worthington, Water Commissioners:

GENTLEMEN. In compliance with the requirements of your Honorable Body, I have the honor to herewith submit my report for the year ending Dec. 31st, 1885.

The total receipts and disbursements for the year were as follows:

RECEIPTS. Cash on hand Jan'y 1st, 1885, \$96,989.72 Cash receipts for year \$353,069.40 Frontage tax..... \$92,209.14 Addition to frontage tax.... 892.31 \$93,101.45 Less returned by Council.... \$91,355.30 **\$**444,424.70 Appropriated from General Fund by order of Common Council..... \$145,058.02 Total.... \$686,472.44

DISBURSEMENTS.

Interest on Water Bonds	92,438.30 332,392.16	\$ 686,472.44
The following itemized statemen	t shows source of r	evenue, viz.:
Water for City purposes		\$100.000.00
From Domestic Consumers and Ma		
" Manufacturers and Rail Roa	ds, metered	46,088.88
" Flushing Sewers		72.77
" Street Sprinkling	 .	1,824 09
" Circuses		
" New Boxes		132.00
" Corporation Cocks		6,441.50
" Turn-on Fees		
" Rent of Dodge Farm		
" Builders		

FROM SALE OF OLD MATERIAL.

Mar. 20, W. C. McDonaldblack mare	75.00
Feb. 13, Jas. Ryan9 3 bush. oats	2.94
" 9, C. Martingrey mare	75.00
May 16, O. Ryan piece 4-in, pipe	50
" 19, W. Jonesold hand cart	50
" 23, M. Lichtenstein100 lbs. waste	
gasket	1.00

June 2, I. Stratfordhydrant pipe and		
tile	1,00	
W. P. Stambach manure (in ex-		
change for oats)		
July 3, J. J. Collinsscrap iron	75	
Aug. 10, M. Lichtensteinscrap iron	3.49	
" 13, O. Ryan load manure	50	
" 18, Bingham & Taylor. 24,650 lbs. scrap	3	
iron	165.07	
" 18, Bingham & Taylor.14,920 lbs. scrap	3 7	
iron	99.91	
" 19, A. H. Barber2 spanners	3.00	
" 20, M. Lichtenstein584 lbs. rope	3.00	
waste	4.38	
" 22, Jno. T. Claris 1 old 6-in. valve.	5.00	
" 28, O. Ryan load manure	v	
-	50	
Sept. 8, M. Lichtenstein3,408 lbs. le a d		
dross	51.12	
17, 1. Schecklet Sale of manufe, to	_	
March 1st, '86.	6.00	
Oct. 2, M. Lichtensteinscrap iron	28.00	
" 10, Fries & Coold brass	151.56	
" 16, M. Lichtenstein,870 lbs. lead		
dross	28.05	
Nov. 6, Fries & Co, 353 lbs. scrap		
brass	121.77	
· Dec. 30, M. Lichtensteinlead dross and		
scrap iron	39.45	\$ 864 , 49

LABOR AND SUPPLIES.

Feb.	18,	Mensch Bro'ssupplies at poor	
		house\$	30.34
Mar.	3,	Hardwick & Ware.fire supply	34.41
"	7,	Laverack & Comaking connect's	37.41
"	13,	Howard IronWorks.branch for Green	
		building	46.66
"	5,	Buffalo St. R. R. Co. changing valves.	94.77
Apr.	11,	Jno. D. Smithforcing out pipe.	50
June	16,	D. Ullmanrepairs to eleva-	
		tor	1.00
July	ı 8,	C. H. Utley branch for elevat'r	45.29
Aug.	5,	Stevenson Bro'slabor turning off.	5.62
"	7,	Geoge Martinrepairs to water	
		pipe	7.00
"	7,	George Martinrepairs to water	
		pipe	7.35
"	15,	J. M. Luippoldlabor at leak	4.00
"	14,	H. C. Frenchbranch for elevat'r	57.79
"	14,	Hurley & Stygallforcing out pipe.	1.25
"	27,	J. S. Moorelaying pipe	80.93
Sept.	26,	Jos. Irrlabor at leak	5.23
"	5,	C. Berricklabor at leak	1.20
"	22,	Buffalo City Parklabor and supplies	171.67
Oct.	7,	Howard Iron Works, labor and supplies	36.41
"	16,	Buff. St. R. R. Comoving valves	8.54
Nov.	19,	R. & P. R. R. Cosetting hydrant	44.24
Dec.	2,	Irlbacker & Davissetting meter	138.23
"	10,	G. Huetterlabor leak	3.00
"	20,	L. H. Knapplabor	8.40
"	22,	Sewer Commission's.changing water	
		pipes, &c	657.31

"	28, D. McConnelllabor, Breck. &		
	Gelston sts	\$ 5.35	
"	31, Tallsma & Carrick setting meter	26.41	
66	31, John Giesellabor	9.81	
44	31, John Giesellabor	4 00	\$1,574.12
	Add for error by City Treasurer		01
*Fr	ontage tax		\$91,355.30
		-	\$ 144 424 70

^{*}Note.—The amount of frontage tax rebated to January 1, 1886, being \$53,605.31.

WATER BONDS.

Bonds outstanding January 1, 1886, issued for the purchase, extention and improvement of the Water Works.

	4										
Date of Issue		Amount. Wh	en I	Oue.	Date	of I	ssue.	Amount.	Wh	en D	ue.
	-						1		İ		
Oct. 1, 186	jo	\$150,000 Oct.	I,	1886	July	I,	1874:	\$ 100,000	July	I,	1906
Mar. 1, 187	70	100,000 Mar.	I.	1887	Aug.	I.	1874	100,000	Aug.	I.	1908
June 1, 18	70	100,000 June	I,	1888	Oct.	I,	1874	79.382	Oct.	I,	1908
Oct. 1, 18	70	145,000 Oct.	ı.	1880	Aug.	1.	1875	100,000	Aug.	I.	1000
		50,000 Jan.	ı.	180ó	Jan.	I.	1876	50 000	Jan.	1.	18q6
Jan. 1, 187	71 3	100,000 Jan.			July			100,000		I,	18 9 6
Aug. 1, 18;	71	50,000 Aug.			Sept.			50,000		2.	1898
Oct. 1, 18		100,000 Oct.			Apr.			100,000			
April 1, 18		50,000 April			Apr. :			100,000			
July 1, 18		100,000 July			July			50,000			1001
Oct. 1, 18		160,000 Oct.			Sept.			100,000			IOOI
•	(100,000 Dec.			Nov.			64,000			1897
Dec. 1, 187	72 1	100,000 Dec.			Apr.			100,000			
Sept. 1, 187	73.	200,000 Sept.			Apr.			90,000			1001
April I, 18		100,000 April			July			100,000			
		, 	-,	- 903	3_3				J = - J	- •	- 9-3
	•										

Total..... \$2,828,382

INTEREST PAID ON WATER BONDS DURING 1885.

January 19th\$	8,750.00
February t6th 1	3,750.00
March 23d 3	4,153.37
April 20th	1,280.00
May 16th 1	0,500.00
June 22d 2	1,500.00
July 16th 2	2,500.00
September 28th 3	4,153.37
October 19th	1,280.00
November 23d	0,500.00
December 21st	9,750.00

^{\$178,116.74}

COST OF WATER WORKS FROM PURCHASE TO DATE.

Original Purchase	\$ 705,000.00
Dodge Farm	100,726.14
Extensions and Improvements	3,452,609.00
Interest on Bonds	2,810,744.23
Maintenance and Repairs	1,320,882.65
On hand January 1, 1885	83,525.24
Total	\$8,473,487.26
RECEIPTS.	
Water Rates	\$3,883,199.39
Bonds	3,028,382.00
Taxes	1,561,905.87
Total	\$8,473,487.26

PRESENT STANDING OF WATER WORKS ACCOUNT.

Original Purchase	705,000.00
Real Estate, including Taxes	100,726.14
Engines	234,456 69
Holly Pumping House	12,092.25
Holly Pumping Machinery	39,000.00
New Engine House	82,610.32
Gas Well	9,406.44
Inlet Tunnel and Pier	530,346 56
Main Pipes, Branches, Hydrants, etc	2,488,442.23
Coal and Boiler House and Chimney	26,711.53
Gaskill Engine	11,354.04
Coal Tunnel connecting Upper and Lower House	3,351.19
New Valve House	910.70
Overhead Crossing	1,447.87
Total	4,245,855.96

COMPARATIVE STATEMENT.

Revenue received, coal consumed and water pumped annually for fifteen years.

_						==:	<u>.</u> = -		
Year.	Revenue.	Expenses.	Coal Consum'd Tons.	Water Pumped. Gallons.	Extensions.	Miles.	ipe.	Miles.	th Year
1871	8 124,865.00	\$77.456.05	3 0.15	2.775,752,490	284.207.84	67	4.643	1	
	138,150 0			3,226,891,140					
1873	168,267.20			3,329,193,162			4,912		1,001
1874	176,219.10						4.905		
1875	184,516.48						1.501		1,966
1876	191,335.84	61,474.22				•	4,931	•	3,340
1877	189,296.90	57,553.27		4.267,218,162			2,631		
1878	200,183.28	55,230 50					3,376		745
1870	205,415.75	54,497.22	5.5 . 5						2,530
1880	216,214 37	60,083.67		5.993.009,343				5 5	
1881	210,031.46	76,629.09							
1882	362,762.07			7.076,212,870					1,655
1883	426,353.57	87,193.53		8,568,445,200					5,135
1881	381.581.64	81,078.88		8,780,071,200					
1885	414,410.77	02,138 30		10,441,303,340					1.474

BALANCE SHEET, BUFFALO CITY WATER WORKS, DEC. 31, 1885.

2.	Buffalo City Water Works Con-		
	struction\$	584,382.00	
3.	Buffalo City Water Works Exten-		
	sion Fund	402,300.18	
4.	Bonds Payable		\$2,828,382.00
5•	City Treasurer	96,989.72	
6.	Hydrant and Water Fund		642,789.90
7-	Buffalo City Water Works Exten-		
	sion Loan	2,387,500 00	
17.	Supply Account		424,830.46
41.	Store House	2,637.53	
61.	Pipe and Specials		1,712.26
85.	Labor Trench Account		174.44
91.	Lead		1,419.59
113.	General Street Repairs	7,075.14	
121.	Salaries	10,808.13	
122,	New Maps	2,431.21	
125.	Inspectors	6,682.43	
127.	Tapping	1,967.00	
128.	Hostler	620.00	
129.	Watchman	763.37	
130.	Teamster	875.63	
131.	Meter Repairs	711.67	
136.	Engineers, Lower Engine House	3,516.56	
137.	Firemen, Lower Engine House	4,478.60	
138.	Labor, Lower Engine House	6,433.13	
139.	Engineers, Upper Engine House	2,383 26	
140.	Firemen, Upper Engine House	1,490.00	
141.	Labor, Upper Engine House	1,816.89	
142.	Reservoir	1,206.81	
144.	Pipe Inspector	525.00	

Feed........

Stable Supplies.....

Horseshoeing.....

Harness Repairs.....

Wagon and Sleigh Repairs.....

Veterinary.....

Joint Leaks.....

Fountains, Free Hydrants and

New Tools, Store House......

Repairs Tools, Store House. ...

Corporation Cocks and Services.

Repairs, Store House Building...

Repairs, Upper Engine House

Supplies, Upper Engine House...

Repairs, Lower Engine House...

Supplies, Lower Engine House...

Repairs, Engine No. 1, Upper

Repairs, Engine No. 2, Upper

General Repairs, Machinery Up-

Engine House.....

Engine House.....

per Engine House.....

Horse Trough Repairs.....

173. 177.

179. 181.

182.

184.

186.

ı 88.

100.

192.

195. 198.

200.

202.

204. 206.

208.

210.

213.

214.

215.

23,686.02

731.03

504.38

68.35

222.00

519.60

1,514.04

856.53

949.62

8.83

1,586.42

2,594.63

1,351.84

249 39

491.76

12,138.32

2,022,68

51.41

575.09

21,10

95.50

217.	Repairs, Boilers Nos. 1 and 2,		
	Upper Engine House	\$ 93.95	
218.	Repairs, Engine No. 1, Lower		
	Engine House	67.76	
219.	Repairs, Engine No. 2, Lower		
	Engine House	693.59	
220.	Repairs, Engine No. 3, Lower		
	Engine House	1,466.29	
221.	Rep., Worth. Boilers, Nos. 1, 2		
	and 3, Lower Engine House	322.92	
222.	Rep., Marine Boilers, Nos. 1, 2		
	and 3, Lower Engine House	83.20	
223.	Repairs, Worth. Boilers, Nos. 4		
	and 5, Lower Engine House.	31.93	
224.	General Repairs, Machinery Lower		
	Engine House	52.93	
225.	New Tools, Lower Engine House	159.13	
227.	Repairs Tools, Lower Engine	18.24	
230.	Blacksmith Shop	1,133.83	
234.	Repairs, Feed Pumps, Lower En-		
	gine House	43.c9	
237.	New Coal and Boiler Shed, Lower		
	Engine House	3,451.00	
251.	City Treasurer	353,069.39	
254.	Water Rates		\$ 294,005.71
257.	Meter Rates	•	46,088.88
260.	Builders		1,420.33
262.	Corporation Cocks		6,441.50
265.	Labor and Supplies		1,574.12
267.	Sale of Old Material		864.49
269.	Rent of Dodge Farm	•	515.00
271.	Street Sprinkling		1,824.09
273.	Circus Rates		22.50

274.	Turn on Fees		\$108.00
275.	Flushing Sewers		72.77
278.	New Boxes		132.00
321.	Repairs of Bridges	\$ 35.24	_
321.	Wagons and Sleighs Purchased	470.00	
322.	Horses Purchased	650.50	
322.	Bird Island Pier Valve	4,416.58	
323.	Inlet Pier	4,106.83	
324.	Freight and Express	442.88	
324.	Rent of Bell Telephone Co	210.13	
325.	Repairs of Dodge Farm	50.68	
325.	16 and 20-inch Pipe, Taking up		
	and Relaying same	799.52	
326.	Testing Worthington Engine No.		
	3, Lower Engine House	1,239.64	
327.	New Gaskill Engine	5,523.60	
328.	Foundation New Gaskill Engine	1,438.55	
328.	Engine Room, New Gaskill En-		
	gine	500.00	
329.	Well and Tunnel, New Gaskill		
	Engine	2,143.91	
329.	River Buoy, Dumping Ground	1,035 58	
330.	Repairs, Engineer's House	43 63	
330.	Repairs, Feed Pumps, Upper En-		
	gine House	155.59	
331.	Old Repair Account	96.08	
331.	Bell Waterphone	100.00	
332.	Traveling Expenses	79.12	
332.	Accident	147.00	
333.	New Tunnel and Boiler house con-		
	necting Upper and Lower En-		
	gine House	3,351.19	

333.	Ganson street, " Pratt & Wadham	
	Slip "	\$ 671.10
334.	36-Inch Force Main	6,020.60
334.	New Valve House, Lower Engine	
	House	910.7 0
335.	Bridge over R. R. at Lower En-	
	gine House	1,447.87
335.	Testing New Gaskill Engine	95 9 .48
401.	Life Saving Station	50. 0 0
401.	Wm. Sooy Smith	325.00
402.	Seneca street, bet. Fillmore Ave.	
	and Dole street	8,316.12
402.	Kremlin alley, Eagle street, 125	
	ft, South	161.86
402.	South Division street, Chestnut to	
	Pine	169.58
403.	Seventeenth street, Connecticut,	
	Northerly	293.64
403.	West avenue, Vermont to Albany	3,298.03
403.	Massachusetts street, Front Ave.	
	to Ferry	4,364.87
404.	Fifteenth street, Vermont to	
	Rhode Island	522.16
404.	Thirteenth street, Massachusetts	
	to Hampshire	588,00
405.	Selkirk street, Clifford to Minton	382.53
405.	Seventh street, 1 1/2-in. Wrought	
	Iron Pipe	46.45
405.	Van Rensselaer street, Seneca to	
	Elk	2,231.57
406.	Euclid Place, End of pipe 200 ft.	
	South	117.17

406.	Linwood avenue, Ferry to Dela-	_	
406.	ware avenue	\$	2,215.06
	line of Fulton		143.98
407.	Babcock street, Elk to Perry		882.49
407.	Fillmore avenue, Genesee to		
	Sycamore		4,057.25
407.	Summer street, Delaware, 600 ft.		
	Westerly		712.56
40 8.	Best street, Jefferson to Grape		206.71
408.	Bryant street, South Sidewalk,		
	Westerly		129.34
408.	Shields avenue, Massachusetts,		
	Southerly		295.70
409.	Balcom street, Michigan street,		
	Westerly		459.10
409.	Plymouth avenue, Massachusetts,		•
	250 ft. North		193 56
409.	Fulton street, Van Rensselaer to		
	Erie R. R		351.47
410.	Peach street, High to North		576.38
410.	Grape street, High to Carlton		526.89
410.	Grape street, Carlton to Virginia		562.64
411.	Fitzgerald st, Elk to Mackinaw.		587.70
411.	Washington street, Tupper to		
	Goodell		1,603.15
411.	Ellicott st., Broadway to Clinton		848.17
412.	Exchange street, Main to Wash-		
	ington		1,115.71
412.	South street, Louisiana to Ham-		0
	burgh E. Did		1,458.73
412.	Richmond avenue, Ferry to Bid-		
	well Place		105.49

413.	Mulberry street, End of pipe to	
	North street	\$ 272.29
413.	Carolina street, Niagara to Pros-	
	pect avenue	380.52
413.	Niagara street, End of pipe to	
	City Line	4,290.10
414.	Mulberry street, High to Carlton	662.85
414.	Sycamore street, Johnson to Sher-	
	man	354.02
414.	Chester street, Glenwood avenue	
	260 feet North	279.05
415.	Northampton street, Jefferson to	
	Masten	1,146.60
415.	Carlton street, Mulberry to Lemon	486.90
415.	E. Bennett street, William to Clin-	-
. •	ton	545.84
416.	Monroe street, Clinton to Eagle.	424.50
416.	Orange street, High to North	522.91
416.	Utica street, Jefferson to Dupont	299.02
417.	St. Paul street, End of pipe to	
	Oak street	585.82
417.	West Summer street, Richmond	
	to York	477.22
417.	Sidway street, Elk to Mackinaw.	636.33
418.	Fox street, Genesee to North	1,361.97
418.	Dupont street, Utica to Glenwood	351.54
418.	Masten street, Dodge to South-	
	ampton	328.75
419.	Richmond avenue, Crossing Mis-	
	cellaneous streets	415.02
420.	Porter street, Heacock, easterly	322.69
420.	Eagle street, Smith to Raze	744.11
420.	Stanton st., Peckham to Lovejoy.	513,54

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42

42 I.	Minton street, Smith to Selkirk	\$ 520.70
42 I.	Smith street, Howard to Peckham	1,431.2
421.	Strauss street, Genesee to Syca-	
	more	1,450.48
4 2 2.	Anderson Place, Richmond to	
	Ashland	791.46
422.	Fulton street, Louisiana to Ham-	
	burgh	1,252.80
422.	South Division street, Michigan	
	to Erie	4,630.30
423.	North Division street, Michigan	
	to Main	6,712.02
423.	Pearl street, U. Terrace to Eagle	5,074.85
423.	Oak street, North Division to So.	
	Division	589.41
424.	South Division street, Emslie to	
	Lord	873.50
424.	Niagara street, Amherst to Parish	649.02
424.	St. John's Place, Wadsworth to	
	Orton	179.47
42 5.	Orton Place, Hudson to Pennsyl-	
	vania	562.99
425.	Ashland avenue, Breckenridge to	
	Auburn avenue	698.89
425.	Coit street, William to Peckham.	868 .3 9
426.	Detroit st., Broadway to Lovejoy.	850.72
426.	Rose street, Carlton to High	491.3
426.	Rich street, Best to Genesee	851.49
427.	Shumway street, Howard to Wil-	
	liam	456.45
427.	Rey street, Mortimer to end of st.	245.27
427.	Seventeenth street, Richmond to	
	Connecticut	160.61

428.	Bird avenue, West avenue to Nia-	
	gara	\$ 407.99
428.	Southampton street, Michigan to	
	Masten	646.86
428.	Baynes street, Ferry 250 ft. South	
	of Auburn	1,135.11
429.	Alabama street, Perry to Mackin-	
	naw	1.315.11
429.	Katherine street, Elk to Erie	
	Crossing	1,194.84
429.	Virginia street, Fifth to Front ave.	304.01
430.	Metcalfe street, Howard to Lyman	228.88
430.	Krettner street, Broadway to	
	Lovejoy	333-34
430.	Clinton avenue, West avenue to	
	Herkimer	928.65
431.	Efner street, End of pipe to Car-	
	olina	356.86
431.	Lewis street, Clinton to Lyman	293.89
431.	Weaver alley, Goodell to Virginia	533.68
432.	Grant street, Ferry to Arnold	297.97
432.	Urban alley, North to High	416.35
432.	Seymour street, Hagerman 250 ft.	
	West	239.86
43 3 ·	Main street, across Bouck and	
	Delevan avenues	201.81
433.	Swan street, 10 in. at Washington	169.36
433-	Swan street, Washington to Elli-	
	cott	193.26
434.	Ellicott street, Seneca to Genesee	5,831.51
434.	Seneca street, Michigan to Lower	
	Terrace	6,862.31
434-	Herkimer street, Albany to Ferry	7,893.06

43 5·	Eagle street, Michigan to Pearl	\$	3,607,95
435∙	Clinton street, Babcock to Williamsville Road		7,417.79
435.	Williamsville Road, Clinton to		194-1-19
	William		6,834.49
436.	Jefferson street, Ferry to Puffer		3,844.32
436.	Ferry street, Main to Jefferson		5,775.05
436.	Amherst street, Military Road to		
	R. R		3,070.41
437.	Exchange st., Heacock to Smith.		4,779.62
437.	Hamburgh street, Elk to Smith	•	3,495.55
437.	Hamburgh street, Exchange to		
	Elk		4,838.70
438.	Lovejoy street, Williams ville Road		
	to North Ogden		4,191.30
438.	Perry st., Heacock to Erie R. R.		2,143.37
438.	Utica street, Chenango, Westerly		367.97
439.	Utica street, Shields avenue, 600		
	ft. West		885.75
439.	Welker street, Utica to Glenwood		243.81
439.	Fox St., Broadway to Sycamore.		1,004.47
440.	Smith street, Broadway to Lovejoy		671.54
440.	Dart street, Forest ave. to Bradley		615.38
440.	Dearborn st., Amherst, Northerly		289.55
441.	Eaton street, End of pipe 125 ft.		
	Easterly		88.67
441.	Masten st., Balcom 200 ft. North		143.73
441.	Elmwood ave., Ferry to Auburn.		882.41
442.	Marvin street, Elk to Perry		793.19
442.	Masten street, Northampton, 400		
	ft. north		525.84
442.	Forest avenue, Forest avenue at		
	Insane Asylum		304.22

443.	Mohawk and Wilkeson streets	. \$	191.72
443.	Essex street, Massachusetts, 200		
	ft. south		190.93
443.	U. Terrace st., Court 200 ft. south		220.48
444.	Fillmore avenue, "C" street, 200		
	ft. south		334.53
444.	Lord st., S. Division to Seymour		290.07
444.	Delavan avenue, West avenue to		
	Congress		1,246.83
445.	Illinois street, Elk to Perry		686.29
445.	Exchange street, Smith to Selkirk		696.42
445.	Lester street, Seneca, northerly		431.79
446.	Maurice street, Seneca, southerly		402.08
446.	Coit street, Peckham to Lovejoy.		613.60
446.	Walden ave., Williamsville Road		
	to Best		8,138.75
447.	Front avenue, Engine House to		
	Hampshire		2,690.49
447.	Genesee street, Michigan to Oak		1,601.33
447.	Huron street, Pearl to Niagara		4,498.21
448.	Elm street, Swan to Genesee		2,051.65
448.	Lovejoy street, North Ogden to		
	City Line		1,107.76
448.	Strauss street, Sycamore to Broad-		
	way		1,675.14
449.	Hampshire street, Front ave. to		
	Herkimer		10,952.42
449.	Eagle street, Pearl to Franklin		378.86
450.	James st., Lord to Montgomery.		832.81
450.	Efner street, Maryland to Hudson		476.96
450.	Pearl street, Niagara to Huron		4,569.15
451.	Oak street, Swan to Broadway		3,166.37
45 I.	N. Ogden st., Lovejoy to William		2,389.58

	\$ 1,526.85	Gas Bills
	1.589.96	Taxes
	2,454.38	count and Building Repairs
\$4,252,378.04	\$4,252,378.04	
MBER 31, 1885.	WORKS, DECEN	Balance, Buffalo City Water Buffalo City Water Works Con-
MBER 31, 1885.	WORKS, DECEM	,
mber 31, 1885.	·	Buffalo City Water Works Construction
MBER 31, 1885.	\$ 584,382.00	Buffalo City Water Works Construction
. , .	\$ 584,382.00	Buffalo City Water Works Construction Buffalo City Water Works Extension Fund
\$2,828,382.00	\$ 584,382.00	Buffalo City Water Works Construction Buffalo City Water Works Extension Fund Bonds Payable
\$2,828,382.00 7,830.07	\$ 584,382.00	Buffalo City Water Works Construction Buffalo City Water Works Extension Fund Bonds Payable City Treasurer
\$2,828,382.00	\$ 584,382.00	Buffalo City Water Works Construction Buffalo City Water Works Extension Fund Bonds Payable City Treasurer

SCHEDULE OF BILLS AND ACCOUNTS

Approved During the Year 1885 by the Water Board and Paid by the City Treasurer.

IMPROVEMENTS AND EXTENSIONS.

Date 1885.	Name.	Description.	Amount.
Jan'y	26. G. C. Grimard	Pay roll, January	\$1,716.42
"	J. H. Shedd	Testing engine	1,239.64
Feb.	9. C. J. Hamilton	Drawing boards	22.10
"	Ulbrich & Kingsley	Stationery	3 8.75
• 6	M. E. Beebe	Services rendered on re-	
		pairs pumping house	25.00
"	George B. Hayes	Special castings	4 90
"	George B. Hayes	Water pipe	431.15
46	George B. Hayes	Water pipe	19.10
"	George B. Hayes	Special castings	36.30
"	George B. Hayes	Water pipe	65.81
**	George B. Hayes	Special castings	14.27
44	George B. Hayes	Water pipe	88.73
"	George B. Hayes	Special castings	5.03
"	Bingham & Morgan	Valve box and service	
		boxes	38.05
"	Hurd & Hauenstein	Pine lumber	81.14
"	Irlbacker & Davis'	Work as per ag't laying	
		pipe to supply U. S.	
		L. H. and L. S. Sta'n.	50.00
"	James Boland	Labor and mat'l under-	
		pinning main wall of	
		engine house	50.00
"	D. McNaughton	Tools, storehouse	11.50

Feb.	9, Wm. S. SmithServices as expert in re-	
	lation to pass'g W. W.	
	with trunk sewer	\$ 325.00
"	Hurd & HauensteinLumber	61.90
"	S. ChamberlainWagon and sleigh rep's.	60.00
"	Irlbacker & DavisSundries	54.32
"	Howard Iron WorksLabor and material	84.07
"	Pratt & CoSundries	34.26
Feb.	23, Norman E. MackAd. prop. cast iron pipe.	10.25
"	Powell & PlimptonSundries	1.61
"	Reinecke & ZeschAd. prop. cast iron pipe.	6.75
"	H. H. Baker & CoSundries	36 68
"	L. A. WalkerSundries	16.63
"	A. R. DavidsonAnalysis of four samples	
	of water	40.00
"	G. M. Hopkins, Phila-	
	delphia, PaOne copy Atlas of City	
	of Buffalo	25.00
"	Hugh McDonaldHorseshoeing	4.60
"	C. J. HamiltonLumber	44.62
"	Goodyear Rubber Co Sundries	39.00
"	Farrar & Trefts Repair engines, etc	10.25
"	Farrar & TreftsRepair engines, etc	9 35
March	2, G. C. Grimard, Cash'r. Pay roll, February	1,989.52
"	I., H. Knapp, Sup't Purchase of two horses.	267.63
March	9, Niagara Bridge Works. Iron girders, 2 columns.	411.00
"	Reinecke & ZeschAdvertising	6.75
"	Norman E. Mack Advertising	10.25
"	John LythSewer pipe	18.40
"	John C. PostOil, etc	40
"	John C. HarveyWagon repairs	56.65
"	Haas & KleinStationery	112.75
"	G. C. Grimard, Cash'r. Wages, week March 7	170.50

W. H. Baker & Co.... Manilla paper....

C. J. Hamilton.....Lumber.....

Frank Williams & Co.. Coal.....

Telegraph Pub. Co....Advertising....

Goodyear Rubber Co.. Sundries.....

Irlbacker & Davis.....Sundries.....

Becker & Wickser.....Stable supplies......

E. H. Butler..... Advertising....

G. C. Grimard, Cash'r. . Wages week ending

G. C. Grimard, Cash'r. Pay roll, March.....

G. C. Grimard, Cash'r.. Wages week ending

Pratt & Letchworth.... Malleable iron......

Joseph Bourgnon.....Charcoal.....

Lesswing & Stines Two new wagons

F. S. Pease Water colors

E. L. Cook.....Sheet lead....

C. J. Heinold......Sundries....

6, John C. Post..... Fresco brush......

March 23.....

March 28.....

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April

49

61,80

160.00

500.00

16.58

17.50

23.10

33.00

5.00

25.00

6.50

1.40

71.45

36.83

20.50

9.00

9.75

196.72

51.61

45.50

24.00

271.25

239.75

35

5.40

2.25

2 64

3.60

21.00

64.00

330.00

2,215.50

April	6, G. C. Grimard, Cash'r Wages, week April 4	\$ 457.62
"	B. CunninghamRemoving rock for new	
	well	1,800.00
April	13, Provident Wood Yard. Hardwood	34.22
"	C. J. HamiltonLumber	87.28
"	Norman E. Mack Two copies daily Times.	2.50
"	Haas & KleinAnnual Reports 1884	241.25
"	Ulbrich & KingsleySundries	32.00
"	International Ferry Co. Use of steamer Niagara.	205.00
"	Buffalo Gas Light CoCoke	2.00
44	Buffalo Lub. Oil CoOil	5.72
"	Hardwick & WareLabor and material	32.59
"	G. W. Tifft, Sons & Co. Labor and material	73.72
46	D. J. StickneyCoal	134.14
"	G. C. Grimard, Cash'r Wages week end'g April	
	II	284.50
44	G. C. Grimard, Cash'r Wages week end'g April	
	18	252.25
"	C. J. HeinoldFeed	84.00
"	W. H. Baker & Co bale U. S. Navy	
	oakum	4.35
"	Hurd & Hauenstein Lumber	48.82
"	The Bell Telephone Co. Rent	45.89
	G. C. Grimard, Cash'r. Weekly pay roll	216.98
	G. C. Grimard, Cash'r. Monthly pay roll	2,176.32
April	27, G. B. Hayes, No. 1Special castings	76.54
May	4, G. B. Hayes, No. 2 Cast iron pipe	43.28
	Lake Erie Boiler Works. Sheet iron	11.38
"	F. S. Miller, Jr prs. wrenches	13.25
"	Becker & WickserStable supplies	16.20
**	G. C. Grimard, Cash'r. Weekly pay roll	229.88
"	W. C. McDonaldOne bay mare	175.00
May	II Weed & Co Butts screws and nails	2 12

	THE BUFFALO CITY WATER WORKS.	51	
May	11, Buffalo Gas Light Co Coke	4.00	
"	D. J. StickneyCoal	22.00	
44	Lesswing & Stines Wagon repairs	13.98	
"	John LythElbows and pipe	45.50	
"	H. D. TaylorWagon repairs	3.01	
"	J. BrendallCordwcod	93.50	
"	Young, Lockwood & Co. Office print'g station'y.	3.75	
"	Atlas Milling CoFeed	10.05	
"	Atlas Milling CoFeed	8.10	
"	T. ConboyFeed	69.13	
"	James D. WarrenAdvertising	3.40	
46	Reinecke & ZeschAdvertising	2.25	
• •	S. ChamberlainRep. steamer, wagon,		
	etc	81.70	
"	E. G. FelthousenFlue scrape and check		
	valve	4.00	
"	Hurd & HauensteinLumber	38.26	
44	Farrar & TreftsRepairing engines	14.20	
"	Pratt & CoSundries	85.14	
"	Pratt & CoSundries	29.57	
"	Goodyear Rubber CoSundries	9.31	
"	Howard Iron WorksSundries	11.00	
"	Goodyear Rubber Co Sundries	55.44	
"	Howard Iron WorksSundries	372.31	
"	Haas & Klein Office printing	69.00	
"	G. C. Grimard, Cash'r.Weekly pay roll	335.02	
46	B. CunninghamExcavating, etc	1,000.00	
May	18, G. C. Grimard, Cash'r. Weekly pay roll	650.43	
May	25, Ulbrich & KingsleyOffice stationery	39.70	
64	C. SuorPine plugs	41.24	
"	H. F. HicklerBuoy for dumping		
	grounds	101.14	
"	The Eddy Valve CoValves	1,160.44	

May 25, The Eddy Valve Co... Valves...... \$ 151.30

"	D. McNaughton Sundries	16.51
"	Geo. W. Tifft Sons & Co. Repairing steamer	11.48
"	Powell & PlimptonStable supplies	70
"	Pratt & LetchworthStorehouse tools	9.53
"	Lee, Smith & MooreCoal	4.00
"	C. J. Hamilton Lumber	6.42
"	Hardwicke & WareSundries	21.30
"	G. C. Grimard, Cash'r. Monthly pay roll	2,176.83
June	1, G. C. Grimard, Cash'r. Weekly pay roll	τ,064 69
"	J. Wahl & Co Pig lead	2,000.00
"	D. KenyonFreight	213.62
"	Bott & HughesPainting	125.00
"	P. Hickler Locating buoy	100.00
"	G. C. Grimard, Cash'r. Weekly pay roll	820.39
"	J. ChurchyardLaying floor pump	•
	house	895.00
June	8, R. G. DrullardCartage	25.00
"	Goodyear Rubber CoSundries	22.97
"	Eddy Valve CoValves	22.97 387.60
	•	
"	Eddy Valve CoValves	387.60
"	Eddy Valve CoValves Pratt & LetchworthSteel Hurd & HauensteinLumbcr	387.60 2.76
 	Eddy Valve CoValves Pratt & LetchworthSteel	387.60 2.76 18.86
 	Eddy Valve CoValves	387.60 2.76 18.86 7.04
. c . c . c . c	Eddy Valve CoValves	387.60 2.76 18.86 7.04 10.80
" " "	Eddy Valve CoValves	387.60 2.76 18.86 7.04 10.80
 	Eddy Valve CoValves	387.60 2.76 18.86 7.04 10.80 150.07 60.00
 	Eddy Valve Co Valves	387.60 2.76 18.86 7.04 10.80 150.07 60.00 38.76
 	Eddy Valve CoValves	387.60 2.76 18.86 7.04 10.80 150.07 60.00 38.76 108.38
 	Eddy Valve CoValves	387.60 2.76 18.86 7.04 10.80 150.07 60.00 38.76 108.38 83.66
 	Eddy Valve Co	387.60 2.76 18.86 7.04 10.80 150.07 60.00 38.76 108.38 83.66 20.50

June 8, Pratt & CoSundries	\$ 86.99
" James BolandRepairing trenches	270.96
" J. Wahl & CoPig lead	385.30
" Bell Waterphone CoRent	50.00
" J. Boland Building foundation	
P. H	1,000.00
" B. Cunningham Excavating, &c	2,000.00
" G. C. Grimard, Cash'r. Weekly pay roll	913.11
June 15, C. J. HamiltonLumber	550.00
" Buffalo Lub. Oil CoOil	5.61
" J. H. Ruckle & CoHemp packing	5.88
" Buffalo Gas Light CoCoke	16.00
" Ulbrich & Kingsley Maps, &c	28.40
" G. C. Grimard, Cash'r. Weekly pay roll	1,078.38
June 22, G. B. Hayes, No. 3 Pipe and special cast's.	476.14
" G. B. Hayes, No. 4 Pipe and special cast's.	76.72
" G. B. Hayes, No. 5 Pipe and special cast's.	1,702.22
" G. B. Hayes, No. 6 Pipe and special cast's.	18.52
" G. B. Hayes, No. 7 Pipe and special cast's.	426.06
" G. B. Hayes, No. 8 Pipe and special cast's.	3,055.34
" G. B. Hayes, No. 9Pipe and special cast's.	264.10
" G. B. Hayes, No. 10 Pipe and special cast's.	2,991.85
" G. B. Hayes, No. 11 Pipe and special cast's.	3,311.71
" J. BolandLabor at L. E. H	.935.75
" P. G. StraubLabor at pumps	22,28
" Ludlow Valve M'g Co. Valves	4,80
" Bickford & FrancisScrap leather	6.50
" The Eddy Valve Co Valves	633.58
" The Eddy Valve CoValves	I I 2.22
" Walbridge & CoSundries	46.18
" H. H. Baker & Co Manilla rope and chain.	56.06
" Hardwicke & WareSundries	109.55
" G. C. Grimard, Cash'r. Weekly pay roll	1,089.86

June	29,	G. C. Grimard, Cash'r. Monthly pay roll	\$2,309.34
July	6,	G. C. Grimard, Cash'r. Excavating trenches	1,162.15
"		The Eddy Valve CoValves	241.97
"		The Eddy Valve CoValves	1,273.39
"		Lake Erie Boiler Works Repairing boiler	6.60
"		P. D. Beard, assignee	
		W. E. LockStable supplies	27.00
"		The Eddy Valve CoValves	219.45
"		Ulbrich & KingsleyOffice Ex. and statio'y.	16.67
"		Buffalo Gas Light CoCoke	16.00
"		Weeks' Scale WorksTwo wheelbarrow scales	90.00
"		Bingham & TaylorValve boxes, &c	397.06
"		J. C. PostSundries	6.56
"		J. BolandBuilding foundation	300.00
"		J. Churchyard Constructing coal hoist	945.35
"		G. C. Grimard, Cash'r. Weekly pay roll	954.48
		B. CunninghamCon'g well and tunnel.	700.00
"		H. G. TroutRepair'g fire steamer	279.09
July	13,	G. C. Grimard, Cash'r. Weekly pay roll	1,501.99
"	i	G. B Hayes, No. 12 Pipe and special cast's.	83.00
66		G. B. Hayes, No. 13 Pipe and special cast's.	3,946.67
"	:	G. B. Hayes, No. 14 Pipe and special cast's.	272.14
"	ŀ	G. B. Hayes, No. 15 Pipe and special cast's.	3,987.38
. "		G. B. Hayes, No. 16 Pipe and special cast's.	131.34
	:	C. B. Hayes, No. 18 Pipe and special cast's.	588.58
"		G. B. Hayes, No. 20 Pipe and special cast's.	493.66
•		G. B. Hayes, No. 22 Pipe and special cast's.	39.34
July	20,	The Courier CoTwo City Directorys	4.00
60		Buffalo Lub. Oil CoOil	1.40
66	i	Powell & PlimptonStable supplies	1.38
"	1	C. J. HeinoldSundries	114.05
"	:	R. Dunbar & SonRep. coal hoist L. E. H.	343·5 ⁸
"	:	C. J. HamiltonLumber	11.09

THE BUFFALO CITY WATER WORKS.

Aug.	24, Haas & KleinWater Bills, &c	\$ 24.00
46	Bell Telephone CoTel. and messengers	15.83
"	J. H. RuckleSundries	2.65
"	Goodyear Rubber Co Packing	31.13
"	Buff. Lub. Oil CoOil	5.72
44	Holly Mfg. Co36-inch pipe	36.00
"	G. D. Barr Hose	210.50
"	Scatcherd & SonLumber	24.85
"	Lake Erie Boiler Works. Furnace	59 00
"	Eddy Valve CoValves	988.71
"	Eddy Valve CoValves	517.30
"	Eddy Valve CoValves	806.09
"	Eddy Valve CoValves	468.88
	Eddy Valve CoValves	247.10
"	Eddy Valve CoValves	337.75
"	Eddy Valve CoValves	313.35
"	J. H. Ullenbruch Thermometers	7.45
66	R. G. DrullardCartage	24.61
"	Pratt & LetchworthSteel castings	4.00
"	John McCarthy Tarred rope	247.77
"	Buffalo Carting Co Hauling valves	4.00
41	John C. PostBrush and oil	5.92
"	Law. GintherWater fountains, &c	386.62
"	H. H. Baker & CoSgl. con. blocks	3.51
"	C. J. Frank	74.65
64	C. J. HamiltonLumber	96.01
"	Chas. SuorTurning plugs	46.97
"	Becker & WickserRepairing harness, &c.	21.62
"	Felthousen & RussellSundries	7.50
"	S. ChamberlainWagon repairs	34 98
"	S. D. ColieLumber	72.96
• 6	Hurd & HauensteinLumber	214.75
46	Bingham & Taylor Valve boxes and cast's.	654.99

Aug.	24, Farrar & Treits Repairing coal noist	\$ 82.74
44	Farrar & TreftsRepairing coal hoist	76.07
44	Hardwicke & WareSundries	44.44
"	Irlbacker & DavisSundries	127.01
44	Irlbacker & DavisSundries	111.73
4.6	James BolandRepairing trenches	420.06
44	A. R. Ketchum Valve boxes	452.63
46	George B. HayesWater pipe	3,566.03
44	George B. HayesSpecial castings	548.36
46	George B. HayesWater pipe	3,737.46
"	George B. HayesSpecial castings	573.54
44	George B. HayesWater pipe	4,828.20
"	George B. HayesSpecial castings	398.09
"	George B. HayesSpecial castings	506.32
. "	G. C. Grimard, Cash'r. Weekly pay roll	126.61
44	G. C. Grimard, Cash'r. Monthly pay roll	2,252.05
44	James = e.m.a e.m.ag eae., e.e	1,000.00
"	Joseph ChurchyardBuilding roof, L. P. H.	682.93
46	G. C. GrimardPostage stamps	50.00
. "	B. CunninghamExcavating rock	1,689.00
46	Pottsville Iron & Steel	
	CoBeams and channels	1,191.90
44	G. C. GrimardWeekly pay roll	1,842.59
Sept.	7, G. C. GrimardWeekly pay roll	1,970.50
66	P. McAuliffeTaking up pipe	300.00
Sept.	14, A. H. BrownLabor on drills	13.54
• 6	H. R. WorthingtonFoot valve and suction	
	pipe	7 5 8. 8 0
"	Mann Bros. & CoLinseed oil	25.43
44	Brady & MaltbyStone, &c	173 93
"	Williamsville Lime Co. Cement	29.20
"	Joseph BourgnonCharcoal	12.00
"	Henry HicklerBuoy	100.00

Sept.	14,	B. Cunningham Excavating, &c	\$ 61.00
. • 66		Buffalo Gas Light CoCoke	12.00
. 46		Buffalo Gas Light Co Removing lamp	3.00
"		James D. WarrenWater report blanks	20.00
"		R. G. DrullardCarting	17.58
46		Bingham & TaylorValve boxes	307.34
ti		Buffalo Lub. Oil CoOil	5.74
"		Weed & CoLock, bolt, &c	82
. "		Lake Erie Boiler W'ks. Repairing buoy	14.27
"		Bigelow Bros Stationery	1.50
"		J. G. Johnson & CoBrass checks	6.25
"		Hugh McDonaldHorseshoeing	9.60
"		John C. PostSundries	6.09
"		D. J. StickneyCoal	11.00
"		D. McNaughtonRepairing	338.84
"		Bott & HughesPainting	197.94
66		James BolandRepairing trenches	1,103.92
. "		S. Somerville & Son Medicine and attend'e.	27.00
. "		Howard Iron WorksHydrants	5,171.57
"		Machwirth Bros Repairing roofs	939-52
"		A, R. KetchamValve boxes	353.70
"		Charles HeinoldStable supplies	260.30
"		Hardwicke & WareSundries	4-75
"		John LythPipe	151.71
"		S. Chamberlain Sundries	15 50
"		James BolandBuilding tunnel	1,000.00
"		Peter Hickler Placing 16-inch pipe	380.00
"		John T. ReesWeekly pay roll	2,024.29
"		N. Corwith & CoLead	4,290.53
Sept.	21,	Becker & WickserRepairing harness, &c.	53.53
"		C. J. HeinoldSundries	48.75
"		W. C. McDonaldTeam	57.62
"		Cutler Furniture CoDesk	115.00

Walbridge & Co.....Sundries.....

Young, Lockwood & Co.Sundries

Valentine & Son.....Repairing locks, &c...

Hardwicke & Ware....Pipe, &c.....

John Lyth......Vit. pipe, &c.....

7.90

19.35

3.60

17.89

105.10

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"

"

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Oct. 12	, Bingham & TaylorBoxes	\$ 235.25
"	J. H. Ruckel & CoSundries	26.37
.6	G. W. Tifft, Sons & Co. Repair Fire Engine	20.37 284.26
**	S. Chamberlain	-
"	The Eddy Valve CoValves	39.40
46	The Eddy Valve CoValves	232.56 58.14
46	The Eddy Valve CoValves	280.00
	The Eddy Valve CoValves,	
46	The Eddy Valve CoValves	7 50 420,00
46	The Bell Telephone Co Rent of telephone	25 00
	The Bell Telephone Co. Telegrams, &c	5·93
4.6	Weed & Co	5.93 6.05
• 6	Fries & CoCorporation cocks	22.62
46	Buffalo Lub. Oil CoOil	5· 4 5
"	John C. PostGlass	3. 4 3 4.98
"	Geo. BaerOffice screen	11.36
46	G. D. BarrHose	200.00
"	Hand & JohnsonChain	159.60
"	Lake Erie Boiler Works. Repairing Boiler	7.00
"	R. G. DrullardCartage	17.68
"	E. L. CookS. Oil	1,50
• 6	H. G. TroutRepairing Hose	2.23
• •	Scatcherd & SonLumber	3.36
••	Atlas Milling CoFeed	7.30
"	Chas. W. HollowaySand	9.38
"	James BolandRepaving	376.98
"	James BolandRepaving	3. 5 33.61
"	Geo. B. Hayes, No. 34. Specials	389.40
• •	Geo. B. Hayes, No. 35. Specials	424.96
"	Geo. B. Hayes, No. 36. Pipe	3,461.57
"	Geo. B. Hayes, No. 37. Pipe	2,664.10
"	Geo. B. Hayes, No. 38. Specials	422.92
"	Geo. B. Hayes, No. 39. Pipe	4,731.04
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THE BUFFALO CITY WATER WORKS.

61

Oct. 26,	J. N. MatthewsAdvertising	\$ 27.80
66 ·	H. H. Baker & Co American flag	10.25
46	National Meter CoMeters	27.00
66	Buffalo Rubber Type	•
	FoundryStamps, ink, &c	5.10
66	George B. HayesSpecial castings	119.86
44	George B. HayesWater pipe	3,582.46
*66	G. C. GrimardWeekly pay roll	1,891.83
46	G. C. GrimardPostoffice stamps	25.00
66	Bott & HughesPainting	500.00
Nov. 2,	G. C. GrimardWeekly pay roll	2,007.91
Nov. 9	N. CorwithLead	4,001.66
66	B. Cunningham Excavating, &c	800.00
46 "	G. C. GrimardWeekly pay roll	1,964.44
46	G. H. HuntingtonFreight, pig lead	150.00
Nov. 16,	G. C. GrimardWeekly pay roll	2,576.35
Nov. 23	G. C. GrimardWeekly pay roll,	2,681.74
Nov. 30,	Howard Iron WorksHydrants, &c	2,899.95
46	Bingham & Taylor Valve boxes and grates.	402.53
"	Farrar & Trefts Iron sewer bridge	246.97
46	James BolandRepairing sewers	829.59
44	H. H. Baker & CoFlags, &c	35.14
44	J. H. Ruckel & CoSundries	98.03
44	S. D. ColieLumber	324.54
**	The Eddy Valve CoValves	424.75
44	The Eddy Valxe CoValves	364.00
"	Tifft Furniture CoFurniture	6.50
46	James BolandRepairing	13 20
• 6	A. L. Barber Asph. pavement	21.00
"	Brush BrosBrick	6.00
**	Thomas ConboyHay and oats	153.60
44	Buffalo Gas Light Co Relaying service	67.82

THE BUFFALO CITY WATER WORKS.

Nov.	30, James BolandPipe laying, sewer and	
	floor, pump house \$	305.00
"	' The Citizens' Gas CoCoke	101.25
46	R. G. DrullardCarting	6.51
46	Peter MaischossFiles	8.83
"	Haas & KleinEnvelopes	9.00
	W. C. McDonaldCleaning streets	46.73
"	W. C. McDonaldCleaning streets	270.00
44	Brady & MaltbyFlagging	3.80
"	Haas & KleinRuled paper	3 50
"	Buffalo Street R. R. Co. Rails	99.29
66	Lee, Smith & MooreCoal	4.00
**	D. W. HodgeRoofing	29.98
"	Scheeler & SonWire railing	41.30
٠.	The Eddy Valve CoValves	193.80
"	C. J. HamiltonLumber	82.63
"	Ulbrich & KingsleyStationery	19.00
66	P. G. StraubLabor	. 18.co
60	Buff. Rubber Type F'dy Stamps	1.20
6	A. R. KetchamValve boxes	119.00
60	Williamsville Lime CoCement	21.00
60	Williamsville Lime Co. Cement	36.25
61	Chas. J. HodgeLaying pipe	73.68
6	Hugh McDonald Horseshoeing	10.80
••	John LythPipe	61.10
6	Goodyear Rubber Co Packing	34.50
6	G. B. StarbirdIron railing	102.47
6	Swift & StambachGasoline	5.25
•	Weed & CoSundries	10.66
6	John C. PostBrushes	9.16
•	Engineer. News Pub. Co. Advertising	4.20
•	Lake Erie Boiler Works. Con. bridge at L. E. H.	978.40
6	G. C. Grimard, Cash'r. P. O. stamps	50.00

64 SEVENTEENTH ANNUAL REPORT OF

Nov. 3	o, G. C. Grimard, Cash'rWeekly pay roll\$	2,660.08
"	Lake Erie Boiler Works. Repairs, &c	6.90
46	C. J. HamiltonLumber	92.02
"	J. H. Ruckel & CoSundries	4.29
"	Bingham & TaylorValve boxes	549.23
"	Irlbacker & DavisSundries	55.51
"	C. J. HeinoldSundries	76.65
"	C. J. HeinoldSundries	22.90
"	S. Chamberlain Wagon repairs	17.21
"	Weed & CoSundries	13.93
"	E. H. Butler Advertising	9.00
44	Eddy Valve CoValves	43.60
"	Eddy Valve CoValves	315.49
46	Eddy Valve CoValves	193,80
"	Eddy Valve CoValves	116.85
"	Eddy Valve CoValves	321.92
"	Eddy Valve CoValves	145.35
"	Eddy Valve CoValves	145.35
44	Valentine & SonKeys	3.35
• 6	Bell Waterphone CoRent waterphone	50.00
"	H. H. Baker & Co Manilla rope	41.84
	H. DiehlRent of lot	100.00
"	Buffalo Carting CoCartage	17.50
Dec.	14, Stafford & Co Board experts	61.75
46	Hand & JohnsonTug hire	98.00
46	P. Hickler Gate at inlet pier	95.64
**	Ulbrich & KingsleySundries	7.35
"	Buffalo Gas Light CoCoke	33.75
"	J. G. JohnsonBrass checks	60
	C. SturmRepairs	2.50
**	L. GintherV. sills	12.60
**	J. C. Post Sundries	6.39
"	J. McCarthy Tarred rope	71.64

	THE BUFFALO CITY WATER WORKS.	65
Dec.	14, Albright & SmithCoal	\$ 17.38
**	Lake Erie Boiler W'ks. One car	252 50
"	Bell Telephone Co Rent telephone	25.00
"	Bell Telephone Co Rent telephone	78.54
"	Geo. B. HayesPipe and castings	3.344,33
46	Geo. B. HayesPipe and castings	2,585.73
"	Geo. B. HayesPipe and castings	3,119.42
"	Geo. B. HayesPipe and castings	2,047.79
44	Geo. B. HayesPipe and castings	245.70
44	Geo. B. HayesPipe and castings	1,833.00
44	Geo. B. HayesPipe and castings	2,563 41
44	G. C. Grimard, Cash'rWeekly pay roll	2,409 57
66	John M. HillServices expert testing	
	new Gaskill engine	798.80
"	B. Cunningham Excavating	2,078.87
Dec.	21, Jas. D. WarrenAdvertising	5.25
	Jas. D. Warren Printing	23.00
44	Haas & KleinSundries	52.00
"	The Courier CoSundries	5 25
"	Banner Milling Co Meal and bran	8.40
"	J. Elliott & Son Two horse covers	8.00
66	S. Somerville & SonVeterinary services	30.25
"	D. J. StickneyCoal	5.50
66	Hurd & HauensteinLumber	41.62
"	Fries & Co Brass Plugs	9.90
"	Union Water Meter Co. Crank, gears and pin's	7.00
"	Becker & Wickser Harness repairs	44.70
66	W. C. McDonald Teaming	282.39
46	D. McNaughtonSundries	53.29
"	Ludlow Valve Mfg. Co. Valves, &c	9.72
"	Cornell Lead CoSolder, &c	51.22
"	S. D. ColieLumber	115.90
"	Felthousen & RusselSundries	6 0.63

Dec. 21, Hardwicke & Ware. 1x4x9 flange. \$80 "F. W. Navagh. One scow. 20 "Star Tug Line. Tug hire. 25 J. Laycock & Son Lumber. 97 "C. J. Heinold. Sundries 54 "Hand & Johnson. Tug hire. 56 "Bott & Hughes. Painting. 113 "Pratt & Co. Sundries. 77 "Farrar & Trefts. Repairing machinery. 12 "Farrar & Trefts. Repairing machinery. 354 "Pratt & Co. Sundries. 112 "Howard Iron Works. Hydrants, &c. 2,411. "James Boland. Repairing. 1,464 "James Boland. Repairing. 1,464 "James Boland. Repairing. 1,488 "James Boland. Repairing. 360 "George B. Hayes. Special cast's and pipe. 360 "George B. Hayes. Special cast's and pipe. 360 "George B. Hayes. Special cast's and pipe. 360
" J. Laycock & Son Lumber 97 " C. J. Heinold Sundries 54 " Hand & Johnson Tug hire 56 " Bott & Hughes Painting 113 " Pratt & Co Sundries 179 " Farrar & Trefts Repairing machinery 12 " Farrar & Trefts Repairing machinery 354 " Pratt & Co Sundries 112 " Howard Iron Works Hydrants, &c 2,411 " James Boland Sewer repairs 1,464 " James Boland Repairing 1,464 " James Boland Valve h'se iron floor,&c 2,239 " James Boland Repairing 601 " George B. Hayes Special cast's and pipe 360 " George B. Hayes Special cast's and pipe 85
" J. Laycock & Son Lumber 97 " C. J. Heinold Sundries 54 " Hand & Johnson Tug hire 56 " Bott & Hughes Painting 113 " Pratt & Co Sundries 179 " Farrar & Trefts Repairing machinery 12 " Farrar & Trefts Repairing machinery 354 " Pratt & Co Sundries 112 " Howard Iron Works Hydrants, &c 2,411 " James Boland Sewer repairs 1,464 " James Boland Repairing 1,464 " James Boland Valve h'se iron floor,&c 2,239 " James Boland Repairing 601 " George B. Hayes Special cast's and pipe 360 " George B. Hayes Special cast's and pipe 85
"Hand & Johnson Tug hire
"Bott & Hughes Painting 113 "Pratt & Co Sundries 119 "Pratt & Co Sundries 77 "Farrar & Trefts Repairing machinery 12 "Farrar & Trefts Repairing machinery 354 "Pratt & Co Sundries 112 "Howard Iron Works Hydrants, &c 2,411 "James Boland Sewer repairs 135 "James Boland Repairing 1,464 "James Boland Valve h'se iron floor,&c 2,239 "James Boland Repairing 601 "George B. Hayes Special cast's and pipe 360 "George B. Hayes Special cast's and pipe 85
" Pratt & Co
" Pratt & Co
"Farrar & Trefts
" Farrar & Trefts
" Pratt & Co
" Howard Iron Works Hydrants, &c
" James Boland
" James Boland Repairing
" George B. Hayes Special cast's and pipe. 360. " George B. Hayes Special cast's and pipe. 85.
" George B. HayesSpecial cast's and pipe. 85.
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" Common D. Hanner Consist and and area
" George B. HayesSpecial cast's and pipe. 101.
" George B. Hayes, Special cast's and pipe. 297.
" George B. HayesSpecial cast's and pipe. 220.
" George B. HayesSpecial cast's and pipe. 154.
"George B HayesSpecial cast's and pipe. 3,879.
" George B. HayesSpecial cast's and pipe. 197.
"George B. HayesSpecial cast's and pipe. 2,495.
"George B. HayesSpecial cast's and pipe. 30.
"George B. HayesSpecial cast's and pipe. 1,584.
" George B HayesSpecial cast's and pipe. 115.
" George B. HayesSpecial cast's and pipe. 181.
" George B. Hayes Special cast's and pipe. 127.

Dec. 21	, D. McNaughtonNew and old tunnel,	
	Bird Island pier	\$ 430.22
66	J. McCarthySubmarine diver	762.50
66	P. Hickler Bird Island pier	1,788.00
46	G. C. Grimard, Cash'r. Weekly pay roll	2,216.22
44	G. C. Grimard, Cash'r. Pay roll, October	2,257.80
**	G. C. Grimard, Cash'r. Pay roll, November	1,204.79
44	Machwirth Bros New boiler house, &c	313.52
Dec. 28	G, G. C. Grimard, Cash'rPay roll December	2,400.12
"	G. C. Grimard, Cash'r Weekly pay roll	270.81
44	C. P. HazardLumber	117.60
44	Jno. Lyth Pipe, elbows, &c	60.80
44	Fries & CoCorp. cocks and brass	
	caps	396.30
44	Lesswing & StinesNew cutter, sleigh, &c.	145.40
"	Eddy Valve CoValves	185.21
"	Lake Erie Boiler Works.Iron	717.78
46	B. CunninghamBlasting on Fox street.	10.00
"	J. H. AllenLumber,	570.19
46	R. G. DrullardCartage	5.29
"	T. Conboy	95.04
"	S. ChamberlainWagon and sleigh rep.	25.90
• 6	Adams & WhiteStationery	127.37
"	J. H. Ruckel & CoSundries	200.95
"	Buffalo Scale CoUse of scales	23.00
**	Goodyear Rubber CoSundries	129.60
"	A. Guskie	130.02
44	B. HammersmithCarrots	12.06
• "	Geo. B. HayesPipe and special cast's.	10.61
"	Geo. B. HayesPipe and special cast's.	32.33
"	C. W. MillerCoach hire	8.50
"	H. McDonaldHorseshoeing	8.00
"	James FranklinTallow	17.30

D	O William Illa I ima Ca Cama	•
Dec.	28, Williamsville Lime Co. Cement	
	Barnes, Hengerer & Co.One mat	11.45
"	Eddy Valve CoValves	84.00
"	Jno. C. PostPutty, &c	98
	Bingham & TaylorValve box, tops, &c	66.53
"	Adams & WhiteStationery	148 48
66	Buff. Lubricating Oil Co.Oil	5.98
66	Felthousen & RussellBurners	3.21
"	H. D. TaylorLeather washers	2.76
"	Weed & CoWire nails, &c	1.25
"	G. C. Grimard, Cash'r. Weekly pay roll	167.97
Dec.	31, Jos. E. Barnard, Comp. Taxes	1,472.46
**	Lake Erie Boiler Wor's. House on inlet pier	1,777.11
٤.	G. C. Grimard, Cash'r. Wages laborers, week	,,,,,
	ending Nov. 28	2,287.21
"	D. W. McConnellCleaning Carlton street	-,,
	sewer	167.37
"		117.50
"		89.35
	W. C. McDonald	
	\$4 \$4	124,830.46
0.0	MAINTENANCE AND REPAIRS.	
188	.	
Jan.	,	
	ending Jan. 3, 1885\$	147.63
"	O. C. Offinard, Cash 1.	39.75
Jan.	26, G. C. Grimard, Cash'r. Pay roll, January	2,891.39
Feb.	9, G. C. Grimard, Cash'r. Postoffice stamps	25.00
"	Young, Lockwood & Co. Stationery	5.45
"	James D. WarrenTwo special rec. books.	12,00
44	Norman E. MackTwo cop's Daily Times,	
	Oct. 1,'84,to Jan.1,'85.	2.50

		THE BUFFALO CITY WATER WORKS.	69	
Feb.	9,	Norman E. Mack3,000 No. 6 white env's.	9.00	
	"	Hugh McDonald Horseshoeing	9.60	
	46	Eddy Valve Mfg. CoValves	73.00	
	"	John C. Post Four lights of glass	64	
	"	Goodyear Rubber Co Heavy tubing	6.00	
	"	J. J. McWilliamsThree tons coal	13.68	
	"	Atlas Milling Co600 lbs. meal and 300		
		lbs. bran	8.40	
	"	Sheeler & SonsTwo Gal. wire rat traps.	2.00	
	44	Thomas Conboy Hay and oats	141.98	
	"	Buffalo Lub. Oil CoCylinder oil	73.50	
	"	H. R. WorthingtonRep'g engine counter.	14.50	
	• •	Hall & Sons Kaoline and fire brick.	22.25	
	"	J. H. Ruckel & CoWick packing	6,68	
	• •	A. H. BrownRepairs tappers' tools.	27.40	
	٠.	James Boland Lab. and mat., rep. boil-		•
		ers, &c., under eng's.	60.26	
	• 6	D. McNaughton Tools, store house	24.52	
	"	L. H. Knapp, Supt Sundry advances	14.83	
	٤٠	Hand & JohnsonTug hire	14.00	
	٤.	S. Chamberlain Wagon and sleigh reps.	10.44	
	• •	Becker & Wickser Harness repairs	38.00	
	4.6	James Boland Repairing	18.24	
	• 6	Irlbacker & DavisSundries	50.87	
	"	Howard Iron WorksLabor and material	36 29	
	• 6	Pratt & CoSundries	23.92	
Feb.	23,	Powell & PlimptonSundries	3.73	
	٠.	G. E. NewmanChimneys and wicks	85	
	44	S. Somerville & Son Veterinary	30.75	
	44	Hugh McDonald Horseshoeing	4.60	
	"	J. H. Ruckel & CoSundries	26.25	
	"	J. J. McWilliamsThree tons coal	13.68	
	. 6	Star Oil CoOil	33.87	

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Feb. 23, C. J. HamiltonLumber	\$ 18:00
" Goodyear Rubber Co Sundries	37.09
" Farrar & TreftsRepairs, engines, &c	91.37
" Farrar & TreftsRepairs, engines, &c	106.77
" Farrar & Trefts Repairs, engines, &c	241.31
" G. C. Grimard, Cash'r. Pay roll, February	2,479.06
" L. H. Knapp, Supt Purchase of two horses.	197.37
March 2, G. C. Grimard, Cash'r. Wages, week ending	
February 28	80.25
March 9, Connelly Bros. & Co Use of diving rig	20.00
. "Buffalo Lub. Oil CoOil	159.70
" Hammond & GuildRep'g 8 day clock	1 50
" H. McDonald	9.20
" John C. PostOil, etc	6.8o
" Haas & KleinStationery	112.75
" G. C. GrimardFreight on meters	8.10
" Ulbrich & KingsleyStationery	61.80
March 23, Courier CoStationery	19.00
" Kasson BrosLub. compound	5.00
" Ulbrich & KingsleyStationery, &c	15.30
" J. H. Ruckel & CoSundries	33 49
" James D. WarrenStationery, &c	26.00
" Weed & CoSundries	85
" H. H. Baker & Co Manilla rope	60
" Star Oil CoOil	31.20
" Haas & KleinEnvelopes, &c	100.25
" Goodyear Rubber Co Sundries	71.19
" Irlbacker & DavisSundries	12.09
" Becker & WickserStable supplies	17.70
" G. C. Grimard, Cash'r. Postage stamps	50.00
" G. C. Grimard, Cash'r. Pay roll, March	2,931.01
April 6, Union Water Meter Co. Rep. on meter register.	3.00
" S. M. KillandWater gauges	50.00

	THE BUFFALO CITY WATER WORKS.	7	7 I
April	6, C. J. HeinoldSundries	\$ 5.6	бз
"	C. SturmSundries	12.2	25
April	13, Hammond & CoonSundries	62.9)5
"	S. Somerville & SonVeterinary	7.5	;0
"	Buffalo Lub. Oil CoOil	124.0	3
April	27, Hardwicke & WareLabor and material	55.3	8
"	J. Viergiver One round globe, 8x4.	8	3o
44	J. J. McWilliamsCoal	13.6	8
44	National Meter Co Meter repairs	7.6	o
"	The Bell Telephone Co. Rent	25.0	0
41	J. D. Smith & CoOne doz. 1/4 pockets	3	30
46	E. H. ButlerAdvertising	2.7	o
"	Wheeler & Davis2 pieces 18" 1/2 chain	2.2	5
"	The Telegraph Pub. Co. Advertising	2.7	0
"	G. C. Grimard Monthly pay roll	2,852.6	2
"	J. J. McWilliamsCoal	4,188.6	0
May	4, Lake Erie Boiler Wks Repairing boiler	11.0	0
"	Becker & WickserStable supplies	25.1	0
"	J. BrendallCordwood	3.4	I
"	Atlas Milling CoFeed	7-5	5
"	S. Chamberlain Rep. steamer, wagon, &c.	2.2	I
"	E. G. FelthousenFlue scrape and check		
	valve	8.0	0
May	11, Farrar & TrestsRepairing engines	164,6	4
46	Farrar & TreftsRepairing engines	191.6	I
"	Pratt & CoSundries	15.3	0
44	Pratt & CoSundries	18.9	4
• 6	Goodyear Rubber CoSundries	17.2	5
**	H. G. TroutRepairing coal car	34.2	5
44	Howard Iron WorksSundries	104.0	8
"	H. G. TroutSundries	14.6	I
"	Goodyear Rubber Co Sundries	44.3	5
44	Howard Iron WorksSundries	16.3	5

May	11, J. H. Ruckel & CoSundries	\$ 98.92
May	18, G. C. GrimardPostage stamps	50.00
"	W. McDonald Forty loads gravel	80.00
May	25, Bickford & CurtisOne leather nozzle	2.50
"	Fries & Co514 ½ Corpora'n locks.	359.80
"	D. McNaughtonSundries	11.00
44	Powell & PlimptonStable supplies	4.89
66	A. H. BrownRepairing machinery	4,55
"	H. H. Baker & Co250 ft. 3" Manilla rope.	12.60
. "	C. J. HamiltonLumber	1.10
"	Farrar & TreftsRepairing boilers	11.65
"	The Courier Lith. Co Office stationery	20.75
**	Hardwicke & WareSundries	56
66.	Farrar & TreftsRepairs to engine	322.76
44	G. C. Grimard, Cash'r. Monthly pay roll	2,853.68
June	r, J. Wahl & CoPig lead	1,000.00
"	J. Rees Freight on pump	2.08
June	8, Lesswing & StinesWagon repairs	66.15
"	Haas & KleinOffice stationery	14 50
"	Atlas Milling CoFeed	8.85
"	The Telegraph Pub. Co. Advertising	8.62
	Goodyear Rubber CoSundries	180.43
"	J. D. WarrenAdvertising	5.00
"	Backus & Chard Oil Co.Cyl. oil	95.72
"	E. H. ButlerAdvertising	9.50
"	Weed & CoSundries	3.18
"	Hurd & HauensteinLumber	43.91
"	Lake Erie Boiler Wks Rep. buoy and boiler	88.75
"	Goodyear Rubber T. F.Office stationery	10.25
"	John C. PostSundries	13.22
"	S. Chamberlain Repairing wagons	45.56
"	J. J. McWilliamsCoal	2,057.70
"	H. R. WorthingtonRepairing pump	101.93

Fred. C. Schotten.....Rebinding books.....

"

THE BUFFALO CITY WATER WORKS.

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18.75

SEVENTEENTH ANNUAL REPORT OF

July 20	, E.G. FelthousenCyl. oil	\$ 19.25
"	Bell, Lewis & YatesCoke	143 47
"	A. H. BrownCorp. cocks and service.	13.80
"	Fries & CoTap coupling	4.80
46	A. R. Ketcham Valve boxes	67.30
"	Wardwicke & WareSundries	17.18
"	J. H. Ruckel & CoSundries	41.66
66	Albright & SmithCoal	8,000.00
July 27	, G. G. Grimard Monthly pay roll	2,973.48
Aug. 24	, Fries & CoCorporation cocks	7.80
"	Fries & CoCorporation cocks	70.15
٤.	Fries & Co Corporation cocks	357.70
"	Ulbrich & KingsleyStationery	10
"	Haas & KleinWater bills	134.00
"	H. G. TroutSundries	2.04
",	Holly Manufact'g CoSundries	7.90
"	J. H. Ruckel & CoSundries	39.25
"	Buffalo Lub. Oil CoOil	132.35
"	Becker & WickserRepairing harness	21.63
"	Felthousen & RussellSundries	9.37
"	Farrar & TreftsRepairing coal hoist	45.66
"	H. G. TroutRepairing engine No. 2.	25.97
"	Hardwicke & WareSundries	16.00
"	Irlbacker & DavisSundries	8.16
"	Irlbacker & DavisSundries	8.50
"	James BolandRepairing trenches	840.12
"	G. C. GrimardMonthly pay roll	3,004.06
"	Albright & SmithCoal	7,000.00
Sept. 1.	, A. H. BrownLabor on drills	13.00
"	Goodyear Rubber CoGasket	1.78
"	Kasson BrosLub. Compound	6.00
"	Buffalo Lub. Oil CoOil	105.95
"	I. H. Ruckel & CoSundries	

THE BUFFALO CITY WATER WORKS.

Dec. 21	, Jabesh Harris Soft Soap	\$ 10.00
"	Buffalo Lub. Oil CoOil	80.90
"	Bickford & FrancisOak leather	3.75
"	Farrar & TreftsRepairing machinery	87.92
"	Farrar & TreftsRepairing machinery	219.57
"	Pratt & CoSundries	6.10
"	G. C. Grimard, Cash'r. Pay roll, October	3,015.62
66	G. C. Grimard, Cash'r. Pay roll, November	2,909.60
Dec. 28,	G. C. Grimard, Cash'r. Pay roll, December	3,300.26
"	Lake Erie Boiler W'ks. Labor	3.50
"	W. G. DixonBoiler Compound	5 0 0
"	J. H. Ruckel & CoSundries	12.29
66	Buffalo Lub. Oil CoOil	53.6 3
Dec. 31,	Jos. Barnard, CompGas bills	1,526.85
	<u>.</u>	

\$92,438.30

SERVICES.

The total number of services in the City, January 1st, 1886, is twenty-two thousand seven hundred and thirty-five. The number of new services during the year being three thousand one hundred and ninety-eight.

Respectfully submitted,

JOHN T. REES.

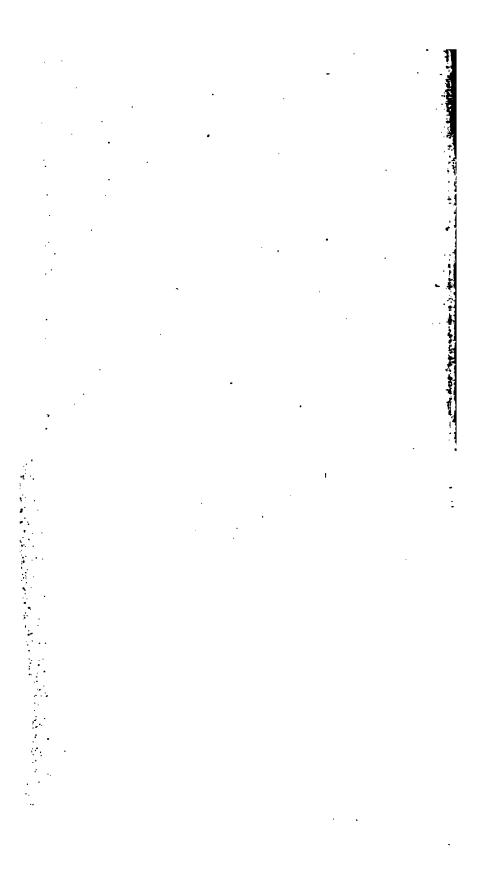
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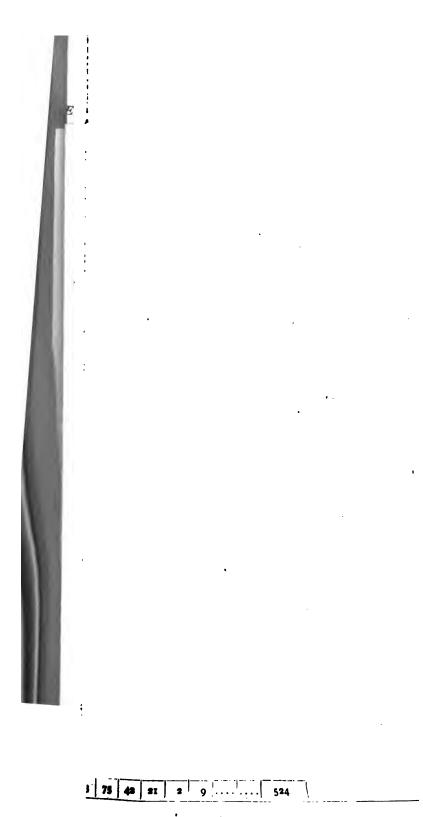
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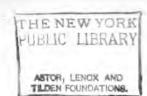
WATER DEPARTMENT

FOR THE

YEAR 1885.







			VA	LVES	S.				
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FIRE HYDRANTS.

The number of Fire Hydrants placed during the year on new line of mains was two hundred and sixty nine, of which one hundred and ninety-five was on the reservoir supply and seventy-four on the high service supply, making the total number in the city on January 1st, 1886, one thousand seven hundred and eighty-three. Following schedule gives location of hydrants set during 1885:

HYDRANTS SET ON NEW MAINS.

Location.	System
Alabama street, southwest corner of Fulton	R.
Amherst street, south side, 300 feet east of Military Road	"
Amherst street, south side, 300 feet west of Grant	".
Amherst street, southwest corner of Grant	"
Amherst street, north side, 150 feet west of N. Y. C. R. R	"
Amherst street, northeast corner of Germania	"
Amherst street, northeast corner of Peter	"
Amherst street, northeast corner of Howell	"
Amherst street, northeast corner of Reservation	"
Amherst street, northeast corner of Bush	46
Anderson Place, southeast corner of Howard avenue	H.
Anderson Place, southwest corner of Ashland avenue	"
Ashland avenue, southwest corner of Breckenridge	"
Ashland avenue, southwest corner of Auburn avenue	"
Babcock street, southwest corner of Perry	R.
Balcom street, northwest corner of Michigan	H.
Baynes street, southwest corner of Breckenridge	"
Baynes street, southwest corner of Auburn avenue	44
Carolina street, southeast corner of Niagara	R.
Clinton street, southwest corner of Babcock	"
ton street, south side, 275 feet east side of Babcock	"
Clinton street, south side, 575 feet east side of Babcock	"

Location.	System
Clinton street. south side, opposite Scoville	R.
Clinton street, south side, opposite Baitz avenue	- 46
Clinton street, south side, 600 feet east of Baitz avenue	44
Clinton street, south side, 700 feet west of Williamsville Road	44
Clinton street, southwest corner of Williamsville Road	44
Clinton avenue, northeast corner of DeWitt	46
Clinton avenue, northwest corner of Herkimer	"
Clinton avenue, north side, 300 feet east of DeWitt	66
Coit street, east side, 300 feet north of Peckham	"
Coit street, southeast corner of Lovejoy	44
Coit street, west side, 300 feet north of William	44
Coit street, west side, 600 feet north of William	66
Dart street, west side, 375 feet north of Forest avenue	46
Dart street, south west corner of Bradley	66
Delavan avenue, northwest corner of DeWitt	44
Delavan avenue, north side, 300 feet east of DeWitt	66
Delavan avenue, northwest corner of Herkimer	"
Delavan avenue, northwest corner of Congress	"
Detroit street, northwest corner of Lovejoy	
Detroit street, west side, 300 feet south of Broadway	"
Detroit street, west side, 600 feet south of Broadway	"
Dupont street, southwest corner of Glenwood avenue	H.
Eagle street, northeast corner of Smith	R.
Eagle street, northwest corner of Montgomery	44
Eagle street, northwest corner of Raze	"
Eagle street, northwest corner of Michigan	"
Eagle street, northwest corner of Elm	"
Eagle street, northeast corner of Oak	"
Eagle street, southwest corner of Ellicott	"
Eagle street, south side, 125 feet west of Main	66
Efner street, east side, 250 feet north of Maryland	"
Elk street, south side, opposite Marvin	66

Location.	System
Ellicott street, southwest corner of Huron	R.
Ellicott street, southwest corner of Orlando alley	"
Ellicott street, southwest corner of Swan	"
Ellicott street, southwest corner of Mohawk	"
Elm street, southwest corner of Swan	"
Elm street, southwest corner of Booth alley	"
Elmwood avenue, northwest corner of Breckenridge	H.
Elmwood avenue, southwest corner of Auburn avenue	"
Erie street, north side, 250 feet west of Main	R.
Exchange street, north side, 250 feet east of Heacock	"
Exchange street, north side, 300 feet east of VanRensselaer.	"
Exchange street, northwest corner of Hydraulic	"
Exchange street, northwest corner of Griffin	"
Exchange street, northeast corner of Heacock	"
Exchange street, south side, 350 feet west of Selkirk	"
Ferry street, south side, 225 feet east of Main	H.
Ferry street, south side, 300 feet east of Michigan	"
Ferry street, south side, 125 feet east of Verplank	"
Ferry street, southwest corner of Jefferson	"
Ferry street, southwest corner of Masten	"
Ferry street, southwest corner of Michigan	"
Ferry street, northwest corner of Purdy	66
Fillmore avenue, west side, opposite B street	R.
Fillmore avenue, west side, opposite Peterson	"
Fillmore avenue, northwest corner of Sycamore	"
Fitzgerald street, northeast corner of Mackinaw	"
Front avenue, junction of Seventh	H.
Fulton street, south side, 300 feet east of Hayward	R.
Fulton street, north side, 100 feet west of Railroad track	"
Fulton street, south side, 300 feet east of Alabama	"
Fox street, northwest corner of High street	"
Fox street, west side, 300 feet north of High	66

Location.	System.
Fox street, southwest corner of North	R.
Fox street, east side, 450 feet south of Sycamore	"
Fox street, east side, 400 feet north of Broadway	"
Fox street, west side, 300 feet north of North	"
Genesee street, southeast corner of Parade Circle	H.
Grant street, southwest corner of Arnold	"
Hamburgh street, east side, at the mill race south side	R.
Hamburgh street, east side, 300 feet north of South	"
Hamburgh street, east side. 400 feet south of Sandusky	46
Hamburgh street, southwest corner of Sandusky	"
Hamburgh street, southwest corner of Scott	"
Hamburgh street, southwest corner of Mackinaw	"
Hamburgh street, northwest corner of Miami	"
Herkimer street, northwest corner of Albany, facing Albany.	H.
Herkimer street, southwest corner of Arkansas	"
Huron street, southeast corner of Niagara	R.
Huron street, south side, opposite Prospect avenue	"
Huron street, southwest corner of Morgan	"
Huron street, southwest corner of Delaware	"
Huron street, southeast corner of Franklin	• •
Huron street, southwest corner of Pearl, Double Hyd	"
Illinois street, east side, opposite Mary	"
James street, northwest corner of Smith	• 6
James street, northwest corner of Montgomery	"
Jefferson street, west side, 500 feet north of Ferry	H.
Jefferson street, west side, 525 feet south of Puffer	• •
Jefferson street, northeast corner of Puffer	• •
Katharine street, west side, 350 feet south of Elk	R.
Katharine street, northwest corner of Mackinaw	"
Katharine street, northwest corner of Sandusky	"
Lester street, west side, 350 feet north of Seneca:	• 6
Linwood avenue, east side, 400 feet north of Ferry	H.

Location.	System
Linwood Avenue, southwest corner of Balcom street	H.
Linwood Avenue, west side, 450 feet north of Balcom street	"
Linwood Avenue, southwest corner of Bouck avenue	"
Linwood Avenue, southwest corner of Delavan avenue	"
Lord street, west side, 100 feet north of Seymour street	R.
Lovejoy street, south side, 450 feet east of Williamsville R'd.	"
Lovejoy street, south side, 900 feet east of Williamsville R'd.	"
Lovejoy street, south side, 425 feet west of "A" street	"
Lovejoy street, southwest corner of "A" street	"
Lovejoy street, southwest corner of Benzinger	"
Lovejoy street, southwest corner of Gold	"
Lovejoy street, southwest corner of Davey	"
Lovejoy street, southwest corner of Goethe	"
Lovejoy street, southwest corner of Schiller	64
Main street, east side, 50 feet south of Ferry	H.
Main street, southwest corner of Erie	R.
Massachusetts street, southeast corner of Front avenue	H.
Massachusetts street, southeast corner of Fifteenth	"
Massachusetts street, southeast corner of Shields avenue	"
Massachusetts street, southeast corner of Brayton	"
Massachusetts street, southwest corner of Essex	"
Massachusetts street, northeast corner of Seventh	66
Masten street, southwest corner of Eaton	66
Maurice street, west side, 500 feet south of Seneca	R.
Mulberry street, southwest corner of North	H.
Niagara street, northeast corner of Parish	R.
Niagara street, east side, 275 feet south of Amherst	"
Niagara street, southeast corner of Collaton	61
Niagara street, east side, in center of lot No. 59	"
Niagara street, east side, south line of lot No. 56	"
Niagara street, east side, in center of John Esser lot No. 1	**
Niagara street, east side, 650 feet south of city line	66

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Location.	System
Northampton street, southeast corner of Masten	H.
Northampton street, south side, 475 feet east of Masten	66
Northampton street, south side, 500 feet west of Jefferson	46
North Division street, southeast corner Main	R.
North Division street, northwest corner Washington, D. H	46
North Division street, southwest corner of Ellicott	66
North Division street, southwest corner of Oak	66
North Division street, southwest corner of Elm	44
North Division street, southwest corner of Michigan	46
North Ogden street, northwest corner of William	44
North Ogden street, west side, 500 feet north of William	66
North Ogden street, northwest corner of Luddington	66
North Ogden street, west side, 425 feet north of Ludington	44
North Ogden street, southwest corner of Lovejoy	64
Oak street, northwest corner of South Division	46
Orton Place, west side, 300 feet north of Hudson	H.
Orton Place, northwest corner of Hudson	44
Pearl street, northwest corner of Court	R.
Pearl street, northwest corner Express alley	16
Pearl street, southeast corner Niagara	46
Pearl street, southwest corner of Church	"
Pearl street, west side, 175 feet south of Swan	"
Pearl street, northwest corner Terrace	46
Pearl street, southwest corner of Huron, double hydrant	**
Pearl street, west side, 200 feet south of Huron	44
Pearl street, west side, 250 feet south of Mohawk	46
Pearl street, west side, 225 feet north of Court	"
Pearl street, northwest corner of Eagle	• 6
Pearl street, northwest corner of Seneca	"
Perry street, north side, 300 feet east of Heacock	"
Perry street, north side, 100 feet west of Erie Railway	"
Perry street, southeast corner of Van Rensselaer	44

Location.	System.
South street, northeast corner of Kentucky	R.
Southampton street, south side, 300 feet east of Michigan	Н.
Southampton street, southwest corner of Masten	**
South Division street, southwest corner of Michigan	R.
South Division street, southwest corner of Elm	٠.,
South Division street, southwest corner of Bond	••
South Division street, southwest corner of Ellicott	46
South Division street, southwest corner of Washington	4
South Division street, southwest corner of Lord	61
St. Paul street, northwest corner of Oak	H.
St. Paul street, northwest corner of Ellicott	46
St. Paul street, north side, 300 feet east of Main	44
Strauss street, west side, 325 feet north of Broadway	R.
Strauss street, west side, 600 feet north of Broadway	44
Strauss street, west side, 600 feet south of Sycamore	64
Strauss street, west side, 300 feet south of Sycamore	4.
Strauss street, northwest corner of Sycamore	**
Strauss street, west side, 300 feet north of Sycamore	• •
Strauss street, west side, 600 feet north of Sycamore	"
Strauss street, west side, 600 feet south of Genesee	44
Strauss street, west side, 300 feet south of Genesee	"
Summer street, north side, 425 feet west of Delaware avenue.	H.
Summer street, north side, 775 feet west of Delaware avenue.	••
Swan street, south side, opposite Oak	R.
Terrace (Upper), east side, 225 south of Court	••
Thirteenth street, southwest corner of Hampshire	H.
Urban alley, west side, 300 feet north of High	
Urban alley, west side, 600 feet north of High	**
Utica street, southwest corner of Dupont	**
Utica street, south side, 300 feet west of Chenango	
Utica street, northwest corner of Shields avenue	••
Van Rensselaer street, southeast corner of Seneca	R

THE BUFFALO CITY WATER WORKS.

FIRE RESERVOIRS.

Location.	Number.
Main street, in front of Spaulding's Exchange	
Main street, in front of Lafayette Park	1
Main street, in front of churches	I
Main street, corner of Exchange	I
Main street, corner of Seneca	
Main street, corner of Swan	I
Main street, corner of North Division	I
Main street, corner of Eagle	
Main street, corner of Genesee	
Seneca street, corner of Chicago	
Goodell street, corner of Washington	
Niagara Square, Junction of Genesee and Court	
Niagara street, corner of Mohawk	
Eagle street, corner of Genesee	
Broadway, in front of Arsenal	
Clinton street, corner of Union	
	_
Total	16
DRINKING FOUNTAINS.	
Location.	Number.
Delaware avenue, corner of Court	I
Main street, corner Seneca	

Main street, corner of Erie1Main street, opposite Court1Main street, corner of Huron1Michigan street, corner of Seneca1Michigan street, corner of Broadway1Michigan street, corner of Genesee1

THE BUFFALO CITY WATER WORKS.	121
Location.	Number.
Perry street, at Elk Street Market	і
Washington Market	I
Total	
HORSE FOUNTAINS.	
Location.	Number.
Broadway, in front of Arsenal	I
Elk street, between East and West Market	I
Elk street, corner of Hamburgh	I
Forest avenue, opposite No. 54	I
Genesee street, between Lower and Upper Terrace	I
Genesee street, corner of Ellicott	і
High street, corner of Genesee	I
Main street, corner of Ferry	I
Main street, corner of Steele	т
Maryland street, corner Fifth (old style)	r
Niagara street, between Eagle and Franklin	x
Niagara street, corner of Prospect avenue	I
Niagara street, corner of Clinton avenue	ī
Niagara street, corner of Amherst (old style)	I
Niagara street, corner of Austin (old style)	r
Niagara street, corner Hertel avenue	τ
Swan street, at junction with Seneca	т
West avenue, between York and Porter avenue	r
York street, corner of Thirteenth	r
Total	19
FREE HYDRANTS.	
Location.	Number.
Chicago, northwest corner of Mackinaw	т
Chicago, southeast corner of Elk	

,

Location.	Nur	nber.
Chicago, southeast corner of Fulton		. і
Elk, northeast corner of Columbia		. і
Elk, southeast corner of Moore		. і
Elk, southeast corner of Hamburgh		. 1
Exchange, north side, between Jefferson and Hamburgh		. т
Exchange, northwest corner of Heacock		. 1
Fifth, northwest corner of Georgia		I
Fourth, northeast corner of Carolina	. 	. т
Louisiana, east side, between Ohio and South		. 1
Louisiana, northeast corner of Sandusky		. 1
Mackinaw, southeast corner of Tennessee		. т
Mackinaw, southwest corner of Vandalia		. т
Perry, southwest corner of Illinois		. і
Perry, southeast corner of Hamburgh		. т
Perry, southwest corner of Hayward		. т
Scott, southwest corner of Illinois		. т
Total		_
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Schedule of Water Pipe Laid in the City, giving Location, Size of Pipe, and on 19/1at System.

Schedule of Waler F	ipe Laid in ine City, givin	Scheaule of Water Lipe Lata in the City, giving Location, Size of Lipe, and on What System. EAST SIDE.	c, ana	K o	IV nat System.
Street.	From	To	Size of Pipe. Inches.	System.	Location of Pipe.
A 11.					
A Doott Road	Smith	1350 feet easterly	0 4	4 5	. or
Adams	Clinton	William	•	× 1	. O. W.
Adams	William	Brown.	8	× 6	19 ft. e. of w. line.
Alabama	Second	Genesee	۰ ۰	4 0	. O
Alebome	Modification	Call Oll	4 4	40	
Alabama	Deres	Machinam	- ·	_ 4	
Ach	Consequent	Broodway	•	۵ ۵	• • • • • • • • • • • • • • • • • • •
Rahmork	William	Clinton	4 «	4 0	
Babcock	Elk	Perry	2	: ~	, do
Beckwith	Adams	Sycamore	9	~	n. of s.
Beech	Virginia	Carlton	9	2	w. of e.
Bennett.	William	Broadway	4	×	. of w.
Berlin	High	Best	. 9	Ξ	e. of w.
Best.	Main	Masten	9	Ξ	s. of n.
Best	Jefferson	Grape	4	Ξ	:
Best	Jefferson	Fox	2	Ξ	of s.
Best	Fox	Genesee	∞	I	of s.
Blossom alley	Huron.	Broadway	4	×	of w
Bond	Clinton.	Howard	4	×	o e
Boston alley	Tupper	Virginia	4	Ξ	of w.
Bristol	Spring	Jefferson	9	×	of n.
Bristol	Emslie	Bond	4	24	of n.
Broadway	Lafayette	Ellicott	•	×	oť o
Broadway	Ellicott	Pratt	9	×	of n.
Broadway	Pratt.	Fillmore avenue	01	~	35 ft. s. of n. line.
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· Pipe Laid in the City,
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· Pipe Laid in the City,

Location of Pipe.	26 ft. p. of s. libe. 23 ft. p. of s. libe. 24 ft. p. of s. libe. 25 ft. p. of s. libe. 26 ft. p. of s. libe. 27 ft. p. of s. libe. 28 ft. p. of s. libe. 29 ft. p. of s. libe. 29 ft. p. of s. libe. 29 ft. p. of s. libe. 26 ft. p. of s. libe. 27 ft. s. of s. libe. 28 ft. p. of s. libe. 26 ft. p. of s. libe. 27 ft. p. of s. libe. 28 ft. p. of s. libe. 29 ft. p. of s. libe. 20 ft. p. of s. libe. 20 ft. p. of s. libe. 20 ft. p. of s. libe. 20 ft. p. of s. libe. 20 ft. p. of s. libe. 20 ft. p. of s. libe. 20 ft. libe. 20 ft. libe. 20 ft. libe. 20 ft. libe. 21 ft. p. of s. libe. 22 ft. p. of s. libe. 23 ft. p. of s. libe. 24 ft. p. of s. libe. 25 ft. p. of s. libe. 26 ft. libe. 27 ft. p. of s. libe. 28 ft. p. of s. libe. 29 ft. p. of s. libe. 20 ft. libe. 20 ft. libe. 20 ft. libe. 20 ft. libe. 21 ft. p. of s. libe. 22 ft. p. of s. libe. 23 ft. p. of s. libe. 24 ft. p. of s. libe. 25 ft. p. of s. libe. 26 ft. libe.
System.	表表表目其其其其其表表表页其表表表其表表表其表
Size of Pipe. Inches.	4
T	Smith Jefferson Jefferson Jefferson Jefferson Jefferson Boston alley Michigan Sycamore Mulberry Lemon Genesee 200 feet west of Chicago Louisiana Alabana 400 ft. e. of Van Rensselser 600 feet easterly Broadway 775 feet northerly Swan Virginia Virg
From	Sherman Adams Sycamore Ellicott Ralph alley Genesce Main Mulberry Lemon Washington Chicago Chicago Chicago Chicago Washington William Seneca Seneca Seneca Carroll Exchange
Street.	Broadway Brown Buron alley Burton alley Button alley Camp Carlton Carlton Carroll Carr

RRRRR 25 ft	R 26 ft. w. of e. R 26 ft. w. of s. R 18 ft. w. of e. H 21 ft. n. of s. H 32 ft. w. of e.	R 40 it. n. oi s. R 24 ft. s. of n. R 24 ft. s. of n. R 24 ft. w. of e. R 24 ft. w. of e. R 24 ft. w. of e.	R 19 ft. w. of c. line. R 38 ft. s. of n. line. R 39 ft. s. of n. line. R 39 ft. w. of n. line. R 39 ft. w. of c. line. R 39 ft. w. of c. line. R 39 ft. w. of c. line. R 39 ft. w. of c. line. R 24 ft. e. of w. line. R 24 ft. e. of w. line. R 24 ft. w. of c. line. R 24 ft. w. of c. line. R 26 ft. w. of c. line. R 27 w. of c. line.
Madison 36 Oak 6 Union 6 Emsile 10 Babcoste 6 Williamsville Road 16 Lovejoy 6 Elk 6 Fine 6 Fine 6 Fine 6			Fulton 532 feet casterly Mississippi Michigan Babcock Eagle Clinton Swan Genesee 4 Genesee 4 Genesee 4 Genesee 7 Genesee 4 Genesee 7 Genesee 6 6 7 7 7 7 7 7 7 7 7 7 7
Main. Washington Oak Union. Emsile. Babcock. William Perry Ohio	Genesee William Lovejoy Main. Utica		Scott Perry Michigan Ohio Columbia. Michigan Babcock. South Division Eagle Seneca Broadway Chippewa. 550 feet north of Chippewa.
Clinton Clinton Clinton Clinton Clinton Clinton Clinton Clinton Clinton Clinton Clinton Coit Coit Coit Columbia	Davis. Depot. Detroit. Dodge.	Eagle Eagle Eagle Eagle East Bennett	East Market East Market Eaton Elk Elk Elk Elk Elliott Ellicott Ellicott Ellicott Ellicott Ellicott Ellicott Ellicott

Schedule of Water Pipe Laid in the City, giving Location, Size of Pipe, and on What System.

Street,	From	To	Size of Pipe. Inches.	System.	Location of Pipe.
Ellicott	Tubber	Goodell	<u> </u>	1	f.
Ellicott	Goodell	Goodrich	_	: =	87 ft. e. of w. line.
Ellicott	Best	Dodge.	9	E	ft. e. of w.
Ellicott	Clinton	Broadway.		<u></u>	
Filicott	Seneca	Chatton		Z P	
Elm	North Division	Broadway		i oz	o yo. ▶
Elm	Broadway	Sycamore	-9	- ×	ft.
Elm	Sycamore	Genesee	4	×	e. of ₩.
Elm	Genesee	Tupper		24	ft. e. of w.
Elm	Tupper	High		H	ft. w. of e.
Elm	North	Best	•	I	ft. e. of ₩.
Elm	Swan	Clinton		2	
Emslie	Seneca	Broadway		24	≱
Euclid Place	Elk	Prenatt.	•	24	ft. e. 1
Exchange	Main	Jefferson		~	ė o
Exchange	Washington	Michigan	_	2	ft. n. of s.
Exchange	Jefferson	Heacock	12	2	ft. n. of s.
Exchange	Jefferson	Heacock	*	~	ft. s. of n.
Exchange	Main	Washington	_	I	ft. n. of s.
Exchange	Heacock	Smith		24	ft. s. of n.
Exchange	Smith	Selkirk	9	~	ft. n. of s.
Ferry	Main	600 feet east of Jefferson	*	I	ft. s. of n.
Ferry	Main	Jefferson	21	I	ft. s. of n.
Fillmore avenue	Seneca	Peckham	92	24	ft. e. of w.
Fillmore avenue	Genesee	Sycamore.	<u>.</u>	~ ~	84 ft. w. of e. line.

Fillmore avenue	"C"	200 feet southerly	- 6 - R		j.	ø. of	ن	line	نِ
Fitzoerald	Elk	Mackinaw	9	-	٤	w. of	ن		ن
Folsom	Michigan	Chicago	9	3	ي	o			ن
Folsom	Chicago	South Cedar	4	_	نے	o.			نِ
Folsom	South Cedar.	lefferson	.9	_	نے	. o			نِ
Fox	Genesee	Sycamore	9		یے	e. of		line	نِ
Fox	Genesee	North	9	_	یے	.ĕ	ن		ij
	Broadway	Sycamore	9		Ή.	e. o			ē.
:	Michigan	:	9		یے	ō			ě
	Hamburgh	L. S. & M. S. R. R	9	-	涉				نِ
	Van Rensselaer	Erie Railway	9	-	یے	۰.	ei Si		نِ
Fulton	Louisiana	Hamburgh			نے		š		نِ
Ganson	South Michigan	320 feet northerly	_		<u>ب</u> ے		ei L	ᆵ	ē.
Ganson	South Michigan	1.760 feet southerly	16 R	- -	نے	w. of	ų u		نِ
Ganson	320 north of S. Michigan	640 feet northerly		-	یے		.	ᆵ	نِ
Genesee	Main	Oak		-	بد	. و	Ė	Ë	<u>ن</u>
Genesee	Oak	Jefferson	6 R	_	۳,		d	line.	ن
Genesee	Jefferson	Best.			نے	و	જાં	line	نِ
Genesee		Oak.		: -	:	:	:	:	:
George		Jefferson				9			نِ
German alley		Genesee	4		15 ft. e	e. of	≱.	line	نِ
Glenwood avenue		Purdy				:		:	
Goodell		Michigan	12 H			s. of			ē.
Goodell	n	Cherry				n O	si 		نِ
Goodell alley		Goodell	4 H			e. o			ĕ
Goodrich	Main	Michigan	# 9	• • •			oi		ĕ
Granger	Chicago	Ohio Basin Slip	4 —						نِ
Grape	Cherry	Virginia	9	-		v. of	i i		ij
Grape	High	Best	H 9						ē.
Grape	Virginia	Carlton	9	-					نِ
Grape	Carlton.	High	9				*	line.	نِ
Green	Michigan	Beak	4	_		_	ķ		ij
Grey	Broadway	Genesee	9	_			ن 		نِ
Hamburgh	Elk.	Fulton	6 R		23 ft. v	₩. 0	ن س		ij
Hamburgh	Exchange	Elk	91				ن 		હું
Hamburgh	Elk	South	-1	[0	ن	line	<u>.</u>

Madison
Monroe. Sherman street Metcalf Shunway Raze Smith Babcock 425 feet westerly Oak

Jefferson	Exchange	William		21 ft.	. e. of	₩.	line.
Tefferson	William	Too feet north of George.		38 ft	>	ú	line.
Tefferson	too feet north of George	Sycamore	_				
	Too feet month of	on the next of Comme	_	:			
Terrer 2000 1000 1000 1000 1000 1000 1000 100	ייים וכבו חסווח מו סכמולבייי	400 leet not the George		:	:	:	:
Jetterson	Sycamore	Davis	_	:	:	:	:
Jefferson	Davis	Brown	_	35 ft	¥	ij	line.
Tefferson	Brown	Virginia		30	ij	`	line.
Tefferson.	Virginia	High	_	30,	ij	`	ine.
Tefferson.	High	Best	_	28 f	¥	Ü	ine.
Tefferson	Best	Ferry	_	43 fi	¥	ij	ine.
Jefferson	Ferry	Puffer	16 H	37 ft.	. w. of	ij	line.
Johnson	Broadway	North		45 ft	¥	ij	ine.
A. C. M.	Cucomon	tor fact northerd:	<u>α</u>	\ 8 ft	ij	¥.	line.
Nanc	Sycamore	425 reet northerry	4	æ ~	≱	ij	line.
Kane	Genesee.	425 feet southerly	6 R	101	ن	¥.	line.
Katharine	EIK	Erie Railway.	9	14 fi	ij	`	ine.
Krettner	Howard	150 feet north of Lovejoy	6 R	33 fi	×	ij	line.
Krettner	Broadway	Loveiov	6 R	13 51	ن	*	ine.
Lafavette		Broadway	2				
Lemon		North	9 H	23 fi	•	w line	ine
Lester		soo feet northerly	_	_			
(ewis		Howard		21 ft	9	à	ine.
Lewis		300 feet northerly.		32 ft.	w. of	ú	line.
Caurel	Michigan	Masten	- '	27 ft	s.	d	ine.
Locust	Cherry	North		28 ft	0	ķ.	ine.
Lord	Clinton	Eagle		:	:	:	:
Lord	South Division	270 feet southerly		32 ft	¥	ij	ine.
Louisiana	Seneca	Hamburgh canal		28 ft	₩.	ij	ine.
Louisiana	Exchange	Ohio		27 ft	¥	ij	ine.
Lovejoy	Emslie	Sherman		25 ft	ś	ë	line.
Lovejoy	Williamsville Road	City line		40 fi	o,	d	ine.
Lutheran alley	Broadway	William.		11 ft	ij	š	ine.
Mackinaw	Louisiana	Hamburgh		25 ft	ä	ø	line.
Madison	Eagle	Brown	6 R	21 ft.	. w. of	ij	line.
Madison	Clinton	Howard		31 f	ij	š	ine.
Main	Ohio	Prime		so fi		نه	ne.

Schedule of Water Pipe Laid in the City, giving Location, Size of Pipe, and on What System.

Location of Pipe.	40 ft. w. of e.	×. of e.	48 ft. w. of e.	e. of w.	w. of e.	w. of e.	w. of e.	28 ft. e. of	24 ft. w. of e.	22 ft. w. of e.	41 ft. w. of e.	44 ft. w. of e.	42 ft. w. of e.	22 ft. e. of w.	12 ft. n. of s.	20 ft. e. of w.	18 ft. e. of w.	33 ft. w. of e.	19 ft. e. of w.	18 ft. s. of n.		28 ft. w. of e.	24 ft. e. of w.	H 27 ft. e. of w. line.	32 ft. e. of w.	42 ft. w. of e.
Size of Pipe. Inches.	01	12			8			9	4	•	9	9	9	9	4	9	36	9	9	9	91	2	12	9	2	9
To	Exchange	North Division.	Goodell	Allen	Ferry	South line of Poorhouse lot.	Virginia	North.	Gay	Perry	Glenwood avenue	1100 feet northerly	South Hampton	550 feet northerly	Mortimer	500 feet southerly	William	William	Lyman	Hamburgh	Chicago	Genesee	Goodell	High	Best	Ferry
From	Prime	Exchange	ision					Virginia		Elk	Utica	Ferry	Dodge	North Hampton	Jefferson	Seneca	Howard	Howard	Howard	Louisiana	Ohio	Ohio	Genesee	120 feet north of Goodell	High	Best
Street,	Main	Main	Main	Main	Main	Main	ا د	Maple	Mark	Marvin	Masten	Masten	Masten	Masten	Mathews alley	Maurice	Metcalfe	Metcalfe	Metcalfe	Miami	Miami	Michigan	Michigan	Michigan	Michigan	Michigan

Milnor	Broadway	William	99	30 ft. w. of e. lir	line.
Mississippi	Obio	Elk	. 4 . X	e is Marie	line.
Mississippi	Elk	Mary	6		:
Mohawk	Washinoton	150 reet north of Ferry	4 W	n. of s.	: હું
Monroe	Clinton	Brown.	6 R	34 ft. w. of e. lin	line.
Monroe	Clinton	Eagle	6 R	w. of e.	ë
Mortimer	Cherry	Broadway	6 R	w. of e.	ë.
Mortimer	William	495 feet north of Peckham	ó R	w. of e.	ë.
Mulberry	Goodell	Carlton	9	w. of e.	ë.
Mulberry	High	North	H 9	ft. e. of w.	ë.
Mulberry	Carlton	High	H 9	w. of e.	ë.
Nichols alley	Seneca	200 feet northerly	4 \	ft. e. of w.	ë.
North	Main	Michigan.	H 9	ft. s. of n.	ë
North	Grape.	Orange.	9	s. of n.	ë.
Northampton	Jefferson	Masten	9	ft. s. of n.	ë.
North Division	Ellicott	Cedar	4 R	ft. n. of s.	ë
North Division.	Cedar	N. Y. C. & H. R. R. R.	9	ft. n. of s.	ë
North Division	Michigan	Main	16 R	s. of n.	ë
North Ogden	Lovejoy	William	IO R	ft. e. of w.	ë.
Oak	South Division	Broadway	4	ft. w. of e.	ë.
Oak	Broadway	Sycamore	9	e. of w.	ë
Oak	Sycamore	Tupper	4 R	ft. e. of w.	ä
Oak	Genesee	Tupper	12	ft. w. of e.	ë
Oak	Tupper	Goodell	H 9	ft. w. of e.	ä
Oak	Goodell	Virginia	4 H	ft. e. of w.	ä
Oak	Virginia	High	9	e. of w.	line.
Oak	North	Best	_	15 It. W. of e.	ģ
Oak	Swan	Broadway		26 it. e. of w.	ë
Ohio	Main	Elk	۰ د ۲		:
Ohio.	Mississippi	Soo feet south of Chicago		40 it. n. of s.	line.
Ohio.	Miami	Columbia			:
Oneida	Emslie	Smith		24 ft. n. of s.	ë.
Orange	Cherry	High	# : 9 '	25 ft. e. of ₩.	line.
Orange	High	North	E	22 ft. e. of w.	<u>.</u>

Schedule of Water Pipe Laid in the City, giving Location, Size of Pipe, and on What System.

Street,	From	To	Size of Pipe, Inches,	System.	Location of Pipe.	Sipe.
Orlando	Elk	350 feet southerly	4	2	e. of	w. line.
Peach	Cherry	Carlton	9	×	ō	. line.
Peach	Carlton	High	9	H	e. of	w. line.
Peach	North	Best	9	H	w. of	e. line.
Peach	High	North	9	H	e. of	. line.
Peckham	Jefferson	Fillmore avenue	9	K	n. of	s. line.
Perry	Main	Mississippi	9	×	n. of	s. line.
Perry	Columbia	Michigan	9	×	s. of	a. curb.
Perry	Marvin	Heacock	9	×	n. of	s. line.
Репу	Heacock	Erie Railway	12	×	s. of	
Pine	Eagle	William	9	×	w. of	e. line.
Pine	William	Sycamore	4	×	w. of	
Porter	Heacock	275 feet easterly	9	×	***************************************	
Potter	William	Broadway	9	×	18 ft. e. of v	r. line.
Pratt	Clinton	William	4	×	ft. w.	. line
Pratt	Eagle	Clinton	9	K	25 ft. e. of v	. line.
Pratt	William	Genesee	9	×	ft. e. of	
Puffer	Main	Jefferson	9	H	ft. s. of	. line.
Ralph alley	Burton alley	Virginia	4	H	ft. e. of	w. line.
Randall.	William	200 feet southerly	+1	×	***************************************	-
Red Jacket	***********	Fulton		24	14 ft. e. of w.	. line
Rey	***************************************	375 feet easterly		×	ft, s.	. line.
Rich		Best		Ħ	ft. w. of	e. line.
Riley	***************************************	450 feet west of Michigan		Ħ	17 ft. s. of 1	. line.
Rose	the same and	Carlton	9	Ż	42 ft. e. of v	r. line.
Rose	Carlton.	High	9	I	As fr a of w	line.

Scott	Main	Illinois	4	- 34 - 34	Ή.	n. of	ø	line.
Scott	Michigan	Chicago	7 7	: - -	:	:	:	:
Scott	Chicago and Chicago	See feet emedaly	_	_	:	:	:	:
Selleirk	Senece	Aso feet south of Exchange		_	ے	: č	•	. <u>.</u>
Sekirk		Perry	19	81	يع ا	9	. ▶	ë
Selkirk	Clifford	400 feet northerly	_	_	نے	0		ine.
Seneca		Washington	_		یے	o.		line.
Seneca		Selkirk			نے	s. of		line.
Seneca	• • • • • • • • • • • • • • • • • • • •	Main		_	یے	9		line.
Seneca	Fillmore avenue	Dole		-	یے	۱. و		ine.
Seymour	Emslie	Hagerman			یے	0		line.
Seymour	Hagerman.	320 feet westerly			یے	s. of		line.
Sherman	Howard	North	_		یے	e. of	*	line.
Shumway	William	Peckham			یے	۷. <u>م</u>		line.
Shumway	Howard	William			بع	ė,		line.
Sidway	Elk	Mackinaw		-	یے	٠. م		line.
Smith.	Abbott Road	Elk	_		یے	o		line.
Smith.	Elk.	Seneca			یے	9		line.
Smith	Howard	Peckham	_	-	نے	9		line.
Smith	Love joy	Broadway	_	•	یے	v. of		line.
South	Louisiana	Ohio			بن	s.	d	line.
South	Louisiana	Hamburgh		:	:	:	:	:
Southampton	Michigan	Masten	_	_	نے	s.	ä	line.
South Cedar	Seneca	Swan		32	نے			line.
South Division	Main	Michigan			نے			line.
South Division	Michigan	Cedar	_		یے			line.
South Division	Cedar	N. Y. C. R. R.	_		یے	n o	ei	line.
South Division	Emslie	S S	_	_	نے			line.
South Division	Michigan	Main	_				:	:
South Division	Chestnut	Pine		R 36	یے	n. of	oń .	line.
South Division	Emslie	Lord	9		ی			line.
Spring	Genesee	Broadway	4		یے			ine.
Spring	Broadway	William	00		، پی			ine.
Spring	William	Clinton	9		ے.		`	ine.
Spring	Clinton	Eagle	4 F	-	æ	0	ö	ine.

System.
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######################################	From	ę	Size of Pipe. Inches.	System.	Location of Pipe.	<u> </u>
Howard Peckham Feckham 6	Сһетту	Broadway		<u> </u>	35 ft. w. of e.	line.
Pecklam Lovejoy 6 R 34 ft. Main Soo feet easterly 6 H 17 ft. Genesee Sycamore 6 R 22 ft. Spring Ellicott Cedar 10 R 22 ft. Ellicott Cedar 10 R 22 ft. Ellicott Senece 6 R 39 ft. Spring Spring 10 R 39 ft. Spring Spring 10 R 39 ft. Spring Spring 10 R 39 ft. Spring Spring 10 R 42 ft. Spring Sherman 12 H 24 ft. Main Washington Michigan 6 R 17 ft. Sycamore Champlin 4 R 17 ft. Eagle William 6 R 17 ft. Clinton William 6 R 17 ft. High North 11 ft. Fig. Fig. 11 ft.	Howard	Peckham. Broadway			31 ft. w. of e. 18 ft. w. of e.	i pe
Main Soo feet easterly H 18 ft. Gal Get westerly G H 17 ft. Genesce Sycamore G R 22 ft. Spring Elifoott Golder G R 27 ft. Elifoott Cedar Sonoca G R 27 ft. Spring Spring Golder G R 27 ft. Spring Spring Golder G R 24 ft. Spring Sherman G R 41 ft. Johnson Washington G R 17 ft. Washington Michigan G R 17 ft. Champlin High W 17 ft. Clinton High W 17 ft. High North High W 17 ft. High North High High High H H H H H H H Clinton High North High H H H H H H H Clinton High North High H H H H H H Clinton High North High H H H H Constant Peckham	Loveloy			یے	ä	
Cake Color 6 A feet westerly 6 B 20 ft. Sycamore Broadway 6 R 22 ft. Spring Ellicott Cedar 10 R 27 ft. Ellicott Cedar 10 R 29 ft. Cedar Spring 10 R 29 ft. Adams Sherwan 4 R 24 ft. Johnson Washington 6 R 24 ft. Washington 6 R 24 ft. Champlin 4 R 24 ft. Walliam 6 R 17 ft. Sycamore Champlin 4 R 24 ft. Clinton William 6 R 17 ft. Worth. Worth. High	Main	300 feet easterly			ft. s.	
Sycamore Broadway 6 R 22 ft. Spring Elikott 10 R 25 ft. Elicott Cedar 6 R 22 ft. Elicott Cedar Seneca 6 R 39 ft. Spring Jefferson 4 R 42 ft. Spring Jefferson Johnson Johnson Sherman 6 R 41 ft. Main Michigan 6 R 17 ft. Washington Michigan 6 R 17 ft. Esgle Champlin 4 R 25 ft. Clinton High 6 R 17 ft. Clinton Clinton High 6 R 17 ft. Clinton High 6 R 17 ft. Clinton Clinton High 6 R 17 ft. Clinton Cli	Oak	624 feet westerly			۔ نے	
Spring Jefferson Figure Sycamore	Broadway			ft f		
Main	Spring	Jefferson.		-	ار ت	
Ellicott Cedar Seneca 6	Main	Ellicott			ft. s. of	
Spring Spring 10 R 42 ft. Spring Jefferson 4 R 44 ft. Jefferson Beckwith 6 R 42 ft. Johnson Sheman 6 R 42 ft. Main Washington 12 H 42 ft. Washington Michigan 6 R 17 ft. Sycamore Champlin 4 R 17 ft. Clinton Wilsh 6 R 17 ft. Clinton Wilsh 6 R 17 ft. Clinton Wilsh 6 R 17 ft. Clinton High 6 R 17 ft. Clinton Clinton High 6 R 17 ft. Clinton Cli	Ellicott	Cedar		_	ff. p.	
Spring Spring 10 R 42 ft. Spring Jefferson 4 R 44 ft. Jefferson Beckwith 6 R 41 ft. Johnson Sherman 6 R 42 ft. Main Washington 12 H 24 ft. Washington Michigan 20 R 17 ft. Sycamore Champlin 4 R 25 ft. Clinton Wilsam 6 R 17 ft. Clinton Wilsam 6 R 17 ft. Clinton Wilsam 6 R 17 ft. Clinton High 11 ft. Fig. Fig. 11 ft. Fig. F	Cedar	Seneca		_	ft. s.	Hipe.
Spring. Jefferson 4 R 4 ft. Jefferson Beckwith 6 R 4 ft. Adams. Sheman 6 R 4 ft. Main. Washington 12 H 24 ft. Main. Washington 12 H 24 ft. Michigan. 20 R 16 ft. Sycamore Champlin 4 R 19 ft. Clinton Wilsam. 6 R 17 ft. Wilsam. 6 R 17 ft. North. High 4 H 11 ft.	Oak	Spring			ft F	Free
Jefferson Beckwith 6 R 41 ft. Adams Johnson Sherman 6 R 42 ft. Johnson Washington 6 R 42 ft. Main Washington Michigan 20 R 15 ft. Washington Michigan 6 R 17 ft. Eagle Champlin 4 R 25 ft. Wilsiam Wilsiam 4 R 17 ft. North North 11 ft.	Spring	Jefferson	*		4 ft. s. of n.	
Adams Johnson Sherman 6 R 4z fr. Johnson Washington 12 H 24 fr. Main Michigan 20 R 15 fr. Sycamore Champlin 4 R 17 fr. Clinton William 4 R 17 fr. North. North. 4 H 11 fr.	lefferson	Beckwith.			5	
Johnson Sherman 6 R 42 ft. Washington 12 H 24 ft. Main Michigan 20 R 16 ft. Washington Michigan 6 R 17 ft. Sycamore Champlin 4 R 17 ft. Clinton William 6 R 17 ft. North North High 11 ft.	Adams	Tohnson.	_	_	f.	E.
Main Washington 12 H 24 ft. Main Michigan 20 R 16 ft. Washington Champlin 6 R 17 ft. Sycamore Champlin 4 R 13 ft. Clinton William 6 R 17 ft. North. North. 4 H 11 ft.	Johnson	Sherman			ft. p.	Hoe.
Michigan Michigan 20 R 16 ft. Washington Michigan 6 R 17 ft. Sycamore Champlin 4 R 25 ft. Eagle Clinton William 6 R 17 ft. North North High 11 ft.	Main	Washington			ft. s.	. line.
Washington Michigna. 6 R 17 ft.	Main	Michigan			ft. n.	. Hne.
Sycamore Champlin 4 R 25 ft.	Washington	Michigan		_	ft P	. Hbe.
Eagle	Sycamore	Chemplin	_	_	ft. w.	Hoe.
Clinton North. High	Eagle	Clinton	_		ن ند	E.
II H H T Vortp Nortp	Clinton	William			ند نز	inne.
Tolking 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	North	High			II ft. e. of w	9

Utica	Jefferson	Dupont	H 9	
Van Rensselaer	Seneca	Porter	_	ft. w. of e.
Van Rensselaer	Seneca	Elk	_	ft. w. of e.
Virginia	Jefferson	Cherry		ft. n. of s.
Virginia	Cherry	Rose		ft. n. of s.
Walden avenue	Best	Williamsville Road		ft. n. of s.
Walnut	Genesee	Eagle	_	ft. w. of e.
Washington	Ohio	Tupper	-	ft. e. of w.
Washington	Ohio	Exchange	_	ft. e. of w.
Washington	Exchange	Genesee	6 R	38 ft. e. of w. line.
Washington	Tupper	500 feet southerly	_	ft. w. of e.
Washington	Tupper	350 feet northerly	_	ft w. of e.
Washington	Goodell	High	_	ft. w. of e.
Washington	Tupper	Goodell		ft. w. of e.
Walter	EIF	Perry		ft. w. of e.
Watson		Broadway		ft. e. of w.
Waverly.	Ferry	Railroad avenue	_	ft. e. of w.
Weaver alley		Virginia		ft. w. of e.
Welker		Glenwood	_	ft. e. of w.
Wells		Exchange	. 4 R	ft. e. of w.
West Bennett	Clinton	450 feet northerly	. ca	
William	Michigan	Pratt.	IO R	ft. s. of n.
William	Pratt	122 feet east of Madison	6 R	ft. n. of s.
William	Jefferson	Adams	20 R	
William	Emslie	766 feet easterly		•
William	:	N. Y. C. R. R.		32 ft. s. of n. line.
William	N. Y. C. R. R.	Indian Reservation Line	_	:
	ď	Williamsville Road	-	ft. s. of n.
Williamsville Road	William	1275 feet north of Broadway.	12 S	42 ft. e. of w. line.
williamsville Road	Clinton	w Illiam	•	IT. e. Of W.
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Laid in the City offine Location Size of Pipe and on What System
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Street.	From	To	Size of Pipe. Inches.	System	Locat	Location of Pipe.	Pipe.
Albany.	Niagara	West avenue	9	2	40 ft. 1		s. line
Allen Amherst	Main	Wadsworth.	4 °	I ×	5 5 7 7	n. of s.	s. line.
Amherst	Military Road.	N. Y. C. R. R.	ص د	: ×	22 ft.	s of	
Anderson Place	Richmond avenue	Ashland avenue	9	I	38 ft.	s. of 1	
Ashland avenue	Bryant	830 feet southerly	•		40 ft.	w. of e.	e. line.
Ashland avenueAshland	Ferry	370 feet southerly	0 0		21 ft e. of w. li	5 6	Inc.
Auburn avenue	West avenue	Gelston	4		27 ft.	s o	. d
Balcom	Main	Michigan	••		41 ft. 1	o o	s. lin
Balcom	Michigan	525 feet westerly	9		24 ft.	s of	o. Jin
Barton	Breckenridge	120 feet southerly	7		5 ft. 4	٠. م	: ::::::::::::::::::::::::::::::::::::
Baynes	Ferry	237 feet north Auburn ave.	•		22 ft.	ģ.	₽: =:
Bean alley	Huron	170 feet southerly	4		5. 1.	0	Ξ:
Bird avenue	West avenue	Grant	0 4		24 11.	si o	= :
Bouck avenue	Nicosa	West	2		23 11.	5 °	E :
Brayton	Vermont	Rhode Island	9	4 II	45 ft.	5 0	
Breckenridge	Niagara	West avenue	91		25 ft. s	ö	.E
Breckenridge	West avenue	Dewitt	4		29 ft.	o o	n. Iii
Breckenridge	Dewitt	Barton	9	24	25 ft.	i. of	H
Bryant, S. S.	Linwood avenue	Howard avenue	9	Ξ	12 ft.	ĕ	s. In
Bryant, N. S	Elmwood avenue	250 feet west of Ashland ave.	9	I	14 ft.	o	e. E
Bryant, N. S	Richmond avenue	210 feet easterly	9	I	14 ft.	7	묘
Butler	Richmond avenue	Delaware avenue	9	I	39 ft. s.	ಠ	n. Fin
Canal	Erie	Commercial.	9	~	17 ft.	, 0	. Hae
(ordina					•	•	:

Carolina.	Sixth	Niagara.	9 4	30		s. of	ä	line.
Carolina	Niagara.	Prospect avenue	9		يع:	s. of		ine.
Cary	Lot line bet. lots 171 & 172.	280 feet west of Morgan	44		27 Fr	, o	oi j	line.
Chenango	Utica	Ferry	9		نے ن	و و د	*	i e
Chippewa	Franklin	Georgia	9	_	ہے	n. of	ø,	ine.
Chippewa	Main	Franklin	9		ند	a. O	Ŋ	ine.
Clifton Place	Cottage	Norris Place	4 I		یے	¥. of	ij	ine.
Clinton avenue	West avenue	Herkimer	9	-	یے	م	d	ë.
College	Cottage	North.	9	-	نے	o o	×.	line.
Commercial.	Terrace	Water			:	:	:	:
Connecticut	Niagara	Prospect avenue			یے	o.	'n	ine.
Connecticut.	Prospect avenue	Fargo avenue	4	_	15 ft. :	s. of	ä	line.
Connecticut	Fargo avenue	West avenue	_	-	نے	م	ċ	ë.
Connecticut.	West avenue	Plymouth avenue	-		نع	r. of	'n	ine.
Connecticut	Plymouth avenue	Richmond avenue	-	-	یے		ä	ine.
Cottage	Mariner	Hudson		_	یے	n. of	'n	line.
Court	Main	Terrace	_		:	:	:	:
Court	Main	Pearl	-	_	52 ft. n. of s. line.	o o	si Si	je.
Court	Morgan	Terrace		_	:	:	:	:
Court	Wilkeson	Georgia			43 ft. n. of s. li	ء م	s,	line.
Danforth	Forest avenue	Bradley			8 ft. 1	Ö	`.	line.
Dart	Forest avenue	Bradley			بر	e. of	`.	line.
Dayton	Main	Prime	<u></u> .		:	:	:	:
Dearborn	Amherst	350 feet northerly			بَرِ	و		line.
Delavan avenue	Chapin Parkway	300 feet easterly	_		بو		d	line.
Delavan avenue	West avenue	Congress			<u>ج</u> بح	٠ ت	Ġ	line.
Delaware avenue	Church	Niagara		_	ب ن	م	B	line.
Delaware avenue	Niagara	Chippewa	_		8 F	e. o	≱	ine.
Delaware avenue	Chippewa	North.			نځ	w. of	ij	line.
Delaware avenue	North	585 feet north of Ferry			6 ft.		ü	ne.
Delaware avenue	585 feet north of Ferry	775 feet north of Ferry	2		יי	o w		ne.
Delaware avenue	775 feet north of Ferry	Chapin Place			، نئے	¥. of	نه	E
Delaware Place	Delaware avenue	Virginia			19 ft. 1	بر م	s,	line.
Dewitt	Breckenridge	400 feet northerly	7			w. of	ات	ine.

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Pipe Laid in the City, giving Location, Size of Pipe, and on	
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Schedule of Water	
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Street.	From	To.	Size of Pipe. Inches.	System	Location of Pipe.
Dewitt	Forest avenue.	485 feet northerly	4	×	>
Eagle	Main	Pearl	9	H	25 ft. n. of s. line.
Pagie Fagie	Main	Morgan	4 01	4 24	20 If. S. of n. line.
Eagle	Pearl	Franklin	9	H	25 ft. n. of s. line.
East	Parish	Farmer	91	×	39 ft. e. of w. line.
Edward	Virginia	220 ft. e. of Delaware ave	4	H	38 ft. n. of s. line.
Einer	Georgia	Carolina	9	2	19 ft. e. of w. line.
Effect	Maryland	Maryland	4.0	20	32 ft. w. of e. line.
Eighteenth	Connecticut	Vermont	9	Œ	2r ft. w. of e. line.
Eighteenth	Rhode Island	Massachusetts	9	H	32 ft. e. of w. line.
Elmwood avenue	Hodge avenue	200 ft. northerly	9	Ħ	
Elmwood avenue	Ferry	Auburn avenue	9	H	30 ft. e. of w. line.
Erie	Main	Тегтасе	9	H	31 ft. n. of s. line.
Erie	Terrace	Water	9	×	38 ft. n. of s. line.
Erle	Water	Buffalo River	4	~	· · · · · · · · · · · · ·
Erie	Main	Pearl	10	2	3r ft. n. of s. line.
Essex	Massachusetts	200 ft. southerly	9	H	16 ft. e. of w. line.
Express	Pearl	125 ft. westerly	9	H	
Fargo avenue	Connecticut	270 ft. southerly	4	H	e. of w.
Fargo avenue	Connecticut	Hampshire	9	H	w. of e.
Fargo avenue	Hampshire	Niagara	9	×	w. of e.
Fargo avenue	Hudson	Pennsylvania	9	K	e. of w.
Fargo avenue	Jersey	Porter avenue	9	н	23 ft. w. of e. line.
Farmer	Niagara	Gürnsey	9	24	n, of s.

ft. s. of n. ft. s. of n.	H 55	H 26 ft. e. of w.	R 34 ft. w. of e.		7 C	R 40 ft. s. of p.	H -	н	H 25 ft. e. of w.	H 21 ft. e. of w.		H 38 II. W. OI e.	: 4 œ		•		41 ft e. of w.	26 ft. w. of	30 ft e of w	R	6 H 30 ft w. of e.	16 R 42 ft. W.	 H	4		4 K 35 II. s. of n. line.		R
Niagara West avenue Richmond avenue		Rhode Island	Pennsylvania	Maiden Lane	Ningara	Vest avenue	Carmine Place		500 ft. north of York	130 ft. southerly.	Rhode Island	Hampshire	200 ft southerly	Swan	Eagle	Chippewa	:	wa Tupper	North	Vermont	216 ft. south of Connecticut.	Niagara	Hampshire	250 ft. n. of Breckenridge	Pearl.	Rost line of C D D	; ;	Sixth
Erie Canal	Main Vork	Vermont	Court	State	Nigger	West avenue	Richmond avenue	Pennsylvania	Porter avenue	Connecticut.	Connecticut.	Khode Island	Carolina	Terrace	Swan	Eagle	:	500 ft. north of Chippewa	Virginia	Porter avenue	Rhode Island	Stand Pipe	Valve House	Ferry	Main	Niscert	Chippewa	Niagara
Ferry Ferry Ferry	Ferry Fifteenth	fteenth	fth th		Forest avenue	Forest avenue.	Forest avenue	Fourteenth	Fourteenth	Fourteenth	Fourteenth	Fourteenth	Fourth	Franklin	Franklin	nklin	Franklin	Franklin	Fremont Place	Front avenue	Front avenue	Front avenue	Front avenue	Gelston	Genesee	Genesee	Georgia	Georgia

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Ketchum Place	Jersey	York	9	H 35	35 ft. w. of	o,	ن	line.
Kremlin alley	Eagle	125 ft. southerly	4	_	It. W	5	ن	ë.
Lake.	Commercial.	to it. easterly	4		:	:	:	:
Lake view avenue	rennsylvania	Forter avenue	0		40 rr. e. or	5	₩.	IIDe.
Lincoln Farkway	Forest avenue	South line of Park	0	:	:	:	:	:
Linwood avenue	North.	Ferry	9	:	:	:	:	:
Linwood avenue	Ferry	Delavan avenue	 9		ff. w	ب	<u>:</u> ن	ë.
Lloyd	Main	South end of Bridge	7		ff. e.	ö		line.
Lloyd	South end of Bridge	Prime	9		ff. e.	ō	₩. Iï	line.
Mariner	Virginia.	North	9	H 30	30 ft. e.	ŏ	W. II	line.
Maryland	Seventh	100 ft. west of Fourth	4		ft. n.	ģ	s.	line.
Maryland	West avenue	Twelfth	9	_		ŏ		ä
Maryland	Cottage	College	9		ft. s.	õ	n. Ei	line.
Maryland	Niagara	Seventh	9	_	:	:	:	:
Massachusetts	Front	Seventh	9 H	1 50	ft. n.			ë.
Massachusetts	Seventh	Niagara	80	1 46	ff. S.		n E	ë
Massachusetts	Niagara.	Prospect avenue	9	1 41	ft.	s. of	:::	ë.
Massachusetts	Prospect avenue	Fargo avenue	9 H	1 40	fts	ö	E	ë.
Massachusetts	Plymouth avenue	Fourteenth	9	1 38	ft. s	þ	n.	ě
Massachusetts	Fargo avenue.	Plymouth avenue	9	20	ff. n		s. Iii	ë.
Massachusetts	Fourteenth	Richmond avenue	9	1 26	ft.			ä
Mechanic	Terrace	350 ft. westerly	4 F		34 ft. n.	6		ilne.
Michigan	Balcom	300 ft. northerly	Т	_	ſŗ.	ø.	<u>ت</u>	line.
Mohawk	Main	Niagara	9		fts	<u>,</u>	<u>.</u> Ξ	line.
Mohawk.	Niagara	Wilkeson	4	:	:	:	:	:
Morgan	Chippewa	Mohawk	4	_	41 ft. w	w. of		ine.
Morgan	Niagara	Eagle	4		ند	e. of		line.
Niagara	Main	250 ft. north of Connecticut			ن ند	é	w. Iii	line.
Niagara	250 ft. north of Connecticut	Rhode Island	24 F	:	:	:	:	:
Niagara	Connecticut	Massachusetts		:	:	:	:	:
Niagara	Massachusetts	Front avenue		29	ند ند	é	×.	line.
Niagara	Front avenue	Breckenridge	16 F		نے	ŏ	ت:	ë.
Niagara	Albany	Forest avenue	4		it ir	6		ë.
Niagara	Breckenridge	300 ft. northerly	4		نے	9		line.
Niagara	Bouck avenue	250 ft. southerly	4	R 19	<u>ا</u> ر ۳			ne.
Niagara	Bouck avenue	Forest avenue	4		f: ¥	9	ت: ن	line.
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Schedule of Water Pipe Laid in the City, giving Location, Size of Pipe, and on What System

	From	ę	Size of Pipe. Inches.	System.	Location of Pipa.	of Pipe.
Niagara	Forest avenue.	Parish			18 ft. w. c	of e. lin
Niagara	Amherst	Parish	9		63 ft. e. o	e de la companya de
Nineteenth	Rhode Island	Massachusetts.		41	39 it. ▼. of e. li 42 ft. ▼. of e. li	of e. line. of e. line.
Norris Place	Cottage	Wadsworth			. :	
North.	Main	Porter avenue	27	Z:	31 ft. n. of s. line.	
North Fearl.	Virginia	Peacock	o «	Ęρ	20 II .c. 0	I W. 11D4
Orton Place	Hudson	Pennsylvania.	•	4 H	18 ft. e. of w. line.	í v. lib
Parish	Niagara	East	91	×		
Park	Virginia	North.	9	H	31 ft. e. of w. line.	f w. Hoe
Park Place	Delaware avenue	Johnson Place	*	ø		:
Peacock	Erie	Norton.	•	24		:
Pearl	Commercial	Terrace	4	~		
Pearl	Terrace	Court	9	H	40 ft. w. of e. line.	f e. line
Pearl	Terrace	200 feet northerly	•	2		:
Pearl	Court	Genesee	•	H	:	
Pearl	Genesee	Tupper	*	I	29 ft. e. of w. line.	w. Hoe
Pearl.	Virginia	250 ft. southerly		H		
Fear	Terrace	Ningara	2	× 6		:::::::::::::::::::::::::::::::::::::::
Fearl	Niagara	Haron		× (
Fennsylvania.	Niagara	175 ft. west of Fourth		×;	24 ff. n. of s. line.	# FED .
Fennsylvania	Prospect avenue	ISO leet easterly.	4	I f	• • • • • • • • • • • • • • • • • • • •	:
renusylvania,	Vest avenue	read the meet of Thirteenth		43	of the state of a line	: 2
Pennsylvania	Fourteenth	Wednesday	2	: 1	10 III	

Porter avenue Connecticut Rhode Island	Jersey Connecticut Rhode Island Massachusetts	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	H 28 ft. e. of w. H 25 ft. e. of w. of e. e. of e. of e. of e. e. of e. of e. e. of e. e. of e. e. of e. e. of e. e. of e. e. of e. e. of e. e. of e. e. of e. e. of e. e. of e. e. of e. of e. e. of e. e. of e. e. of e. e. of e. of e. of e. of e. of e. of e. of e.	
Sixth	200 ft. west of Fourth	70	21 fr	s. line.
Seventh	Prospect avenue	9	H	
. Prospect avenue	West avenue	8 8	H	11.0
Prospect avenue	West avenue	1 7		i :
Fourteenth	The Circle	. 2	н	:
Main	Hanover	4,	24	:
Hudson	Porter overine	0 4	H 30 II. e. 01	w. line.
Porter avenue	Vermont	25, 2		; :
Porter avenue	Connecticut	20	Н	:
Connecticut	Vermont	4	H 17 ft. w. of	ij
Vermont	Hampshire	9	، نے	ij
Hampshire	ozo fi westerly	0 0	R 42 ff. w. of	e. Inc.
lersey	Fourteenth	4	13 0	id
Sixth	Niagara	. 9	ft. s.	ä
Prospect avenue	Richmond avenue	9	25 ft. n.	જાં
Jersey	Forest avenue	91	16 ft. e.	ě.
Erie	Peacock Slip	9	41 ft. e.	ě.
Main	Franklin	4	39	n. line.
Main	Terrace	12	۳	:
Main	Ioo feet westerly	•	۳. ا	:
Fargo avenue	Prospect avenue	•		
·· Vermont	Connecticut	_	22 ft. e.	
Kichmond avenue	Connecticut.	٥٧	24 If. c.	of w. line.
Wilkeson	Georgia	Š 4	R 32 ft e of w	w. line
Georgia	Porter average	-	3	

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What System
Pipe, and on
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Pipe Lav
ater Pu
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Schedule

Street,	From	To	Pies of System System	Location of Pipe.
Seventh	Porter avenue	Vermont	4.	26 ft. e. of w. line.
Seventh	Vermont	Massachusetts	, 8, 4 1, 8, 1	
Seventh	Massachusetts	Front avenue	2 2 2	
Seventh	Store-house	Court		23 ft. e. of w.
Sixteenth	York	Vermont		40 ff.
Sixth	Court	Porter avenue	4 æ 9 æ	48 ft. w. of e.
State	Canal	Water.	4.	3
St. John's Place St.	Orton Place	325 ft. easterly	4 4	47 ft. n. of s. line.
Summer	Main	Howard avenue	9	44 ft. n. of s.
Swan	Main	Pearl Hudson	9 9	
Terrace, lower	Court	Seneca		61 ft. e. of w.
Terrace, lower	Court	Mechanic.	_	26 ft. e. of w.
Terrace, upper	Seneca.	Main Main	8 4	118 ft. e. of w. line.
Terrace, upper.	Eagle	Daw alley		13 ft. ₩. of e.
Terrace, upper.	Court	275 ft. southerly	4.	II ft. w. of
I errace	Franklin Pennsylvania.	Evans	0 9	38 ft. w. of e.
Thirteenth	Vork.	goo ft. southerly	4	13 ft. e. of
Thirteenth	York	Rhode Island	- 9 -	1

Thirteenth	Rhode Island	Massachusetts	H 9	ft. w. of
Thirteenth.	Massachusetts	Hampshire	9 9	ft. w. of e.
Tonawanda	Amherst	500 ft. southerly	4 R	ft. w. of e.
Tracy	Delaware avenue	Carolina	_	ft. n. of s.
Tupper	Main	Virginia		ft. s. of n.
Tupper	Delaware avenue	500 ft. westerly	_	ft. s. of n.
Twelfth	Virginia	Maryland		w. of e.
Utica	Main	Linwood avenue	H 9	:
Utica.	Linwood avenue	Delaware avenue	H 7	ft. n. of s.
Utica	Delaware avenue	160 ft. w. of Elmwood	_	ft. n. of s.
Utica	Elmwood avenue	125 ft. westerly	7	14 ft. s. of n. line.
Utica	Chenango	Eighteenth		ft. s. of n.
Utica	Shields avenue	Massachusetts	_	ft. s. of n.
Vermont	Richmond avenue	West avenue	_	ft. n. of s.
Vermont	West avenue	Niagara	16 H	'n
Vermont.	Prospect avenue	Seventh	24 R	
Vermont	Seventh	Front avenue	20 R	
Vermont.	Seventh	Front avenue	3 H	ft. s. of n.
Vermont	Niagara	Seventh	36 R	ft. s. of w.
Vermont	Niagara	Seventh	4 H	ft. s. of n.
Virginia	Cottage	Tupper	H 9	39 ft. s. of n. line.
Virginia.	Cottage	Franklin		ft. n. of s.
Virginia	Tupper	West avenue		ft. n. of s.
Virginia	West avenue	Prospect avenue	_	ft. n. of s.
Virginia	Seventh	Sixth		ft. s. of n.
Virginia	Fifth	Front avenue	_	ft. n. of s.
Wadsworth	Allen	Pennsylvania		ft. n. of s.
Wadsworth Place	College	Wadsworth Park	9 H	
Water.	Commercial	Norton		
West avenue	Carolina	Virginia.		26 ft. w. of e. line.
West avenue	Virginia	Porter avenue		ft. e. of w.
West avenue	Porter avenue	600 ft. southerly	_	
West avenue	Porter avenue	Connecticut	9 9	ft. w. of e.
West avenue	Connecticut	Vermont	H 91	ft. e. of w.
West avenue.	Albany	Breckenridge	6 R	22 ft. e. of w. line.
West avenue	Breckenridge	Forest avenue	20 22	ft. e. of w.

SEVENTEENTH ANNUAL REPORT OF

	Location of Pipe.	27 ft. e. of w. Hne. 27 ft. e. of w. Hne. 24 ft. w. of s. Hne. 37 ft. e. of w. line. 25 ft. s. of n. Hne. 43 ft. s. of n. line. 43 ft. s. of n. line.	
5	System.		: . ;: :
, GMa	Size of Pipe. Inches.	000405440	
ng Location, Size of Pip	To	Hampshire. Albany. Albany. Carolina. Hudson Sixth Mohawk Richmond avenue	
Schedule of Water Pipe Laid in the City, giving Location, Sise of Pipe, and on What System.	From	Vermont Hamphire Richmond avenue Georgia Carolina Court Sixth Seventh West avenue	
Schedule of Water Pi	Street,	West avenue West summer West summer West summer Whitney Place Whitney Place Whitney Place Wilkeson Wilkeson Wilkeson York	

PUMPING DEPARTMENT. 1885.



PUMPING DEPARTMENT.

PUMPING ENGINES AND THEIR CAPACITY PER 24 HOURS.

I. Lower House.

Engine	No.	1,	Worthington	1	10,000,000 ga	allons.
"	"	2,	"		15,000,000	"
"	"	3,	"		15,000,000	"
"	".	4,	Gaskill		15,000,000	"

II. Upper House (Distributing.)

Engin	e No.	2,]	Holly		. 6,000,000 į	gallons.
"	"	Ι,	"	Reserve	. 3,000,000	"
Water	Pump	ed	1885	I	0,441,393,340	"
• • • • • • • • • • • • • • • • • • • •	"		1884		8,789,971,200	"
Ir	crease	e, I	885.	- 1 1	1,651,422,140 §	gallons

DAILY SUPPLY.

The average daily supply for the year 1885 was twenty-eight million six hundred and six thousand five hundred and fifty-seven gallons, an increase of four million five hundred and twenty-four thousand four hundred and forty-five gallons over the previous year. On the following days the greatest and least amounts were pumped:

150 SEVENTEENTH ANNUAL REPORT OF

GREATEST AMOUNTS PUMPED.

Wednesday, February 11, 188542,401,100 g	allons.
Tuesday, March 17, 188543,051,500	*5
Saturday, March 21, 188542,705,100	**

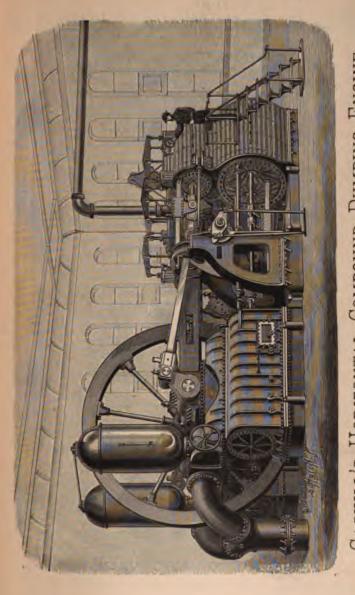
LEAST AMOUNTS PUMPED.

Sunday,	May 10, 188518,855,900	gallons
"	September 6, 18851,388,500	48
44	October 4, 1885	14

ı	Raised of Coal.	rage Daily Height Water in	Reservoir.	DU'	TY OF ENGIN	ES, Nos. 1, 2 A	ND %	
1	Water	Average Dail Height of Water in Reservoir,		Low Service.			HIGH SERVICE	
	Gallons of with One	Feet.	Inches.	No. 1.	No. 2.	No. 8.	No. 8.	
	686	19	4	47.342,380	41,657,888	44.583,155		
	578	19	9	42 419,874	49,108,689	48,312.943	58,204,626	
	582	19	6	44,120,640	46,040,776	48.146,133	54,012,714	
	584	19	5	43,366,913	48, 169, 125	51,442,614	58,612,627	
	560	19	7 1	39.579,610	44,273,483	47.870,444		
ı	528	19	7	40,711,330	48,488.596	40.532,464	51,829,987	
	516 601	19	6 ¹	50 065 671 48,244,748	45,680,920 47,796,073	48,292,011 47,924,822	51,028,738	
1	597	19	7	47.515,912		48,613.346	57.396,292	
	940 ₁	- 1	7	50,254,686	46,786,078	50 566,165		
	695	18	2	47, 178, 329	47,732,899	43,462,608	51,859,130	
	626	19	8	40,480,000	46 430,220	49 323,462	58,967,310	
ŀ	· · · · · · · · · · · · · · · · · · ·		• • • •	· · · · · · · · · · · · · · · · · · ·				
ĺ	* 599 :		!				1	
	582	19	5	45,106,674	46,717,242	47,422.514	55,238,928	
	587	10		47,013,728	48,905,028	53.749.733	58,021,900	

OBLINEW CORK

ASTOP, LENCX AND TILLIEN FORBLANDING.



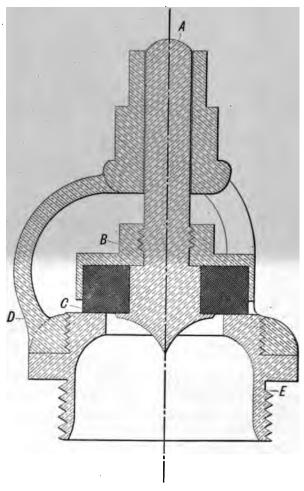
GASKILL'S HORIZONTAL COMPOUND PUMPING ENGINE,

Service to the service of the servic

PUBLIC LIERARY

GASKILL'S HORIZONTAL COMPOUND PUMPING ENGINE

BUFFALO, N. Y., 1885.



SECTION OF PUMP VALVE.

REPORT ON

CONTRACT TRIALS,

GASKILL PUMPING ENGINE,

Buffalo, N. Y., December, 1885.

To the Honorable Board of Water Commissioners of the City of Buffalo: Louis P. Reichert, James Ryan, G. W. Miller:

GENTLEMEN:—I have the honor to report to you upon the performance of the Gaskill Compound Pumping Engine recently erected in your lower pump-house by the Holly Manufacturing Company, of Lockport, N. Y., as follows:

The engine is of the horizontal beam rotative type, compound condensing, and is really two independent and complete engines coupled—with cranks at quarters upon the shaft—with one fly-wheel common to both.

The high-pressure steam cylinders are placed above and parallel with the low-pressure steam cylinders, with their pistons moving in opposite directions.

Each half of the engine contains one high-pressure steam cylinder, one low-pressure steam cylinder and one double-acting plunger pump, with central packed gland.

The steam cylinders are jacketed sides and heads.

The pumps are in line with the low-pressure cylinders, with stiff connections between the low-pressure pistons and the plungers.

The housings which support the engine beams are placed between the pumps and steam cylinders, with the bearings for beam centres midway between the centre line of high and low-pressure steam cylinders.

The upper pins of the engine beams are connected by means of short links to the pins of the cross-heads of high-pressure pistons, and the lower pins of the beams are similarly connected to the pins of the cross-heads of low-pressure pistons.

The power developed in the high-pressure cylinders is transmitted through the engine beams to the pump-plungers, and the power developed in the low-pressure cylinders is transmitted to the pumpplungers direct through stiff connections.

The low-pressure steam cylinders, housings for the beam centres, and pump barrels are tied, and braced together upon the the horizontal centre lines of the several parts.

The dimensions of steam cylinders taken from contractor's specifications are as follows:

High-pressure cylinders
The diameters of plungers, plunger-rods and strokes of plungers and low-pressure pistons, were carefully measured after the duty trial by the writer and found to be as follows:
Engine "A," diam. plunger, inches
The boilers supplying steam to the engine were furnished by the contractor and form a part of his general plant, and are of the fol-

lowing dimensions obtained from contractor's specifications:

Style of boilers, return tubular. Number of boilers...... Diam. of boilers, inches......

THE BUFFALO CITY WATER WORKS.	159
Length of boilers, feet	. 18
Tubes, number	. 8o
Tubes, diameter, inches	31
Tubes, effective length, feet	. 18
Steam domes, one to each boiler, diam., inches	. 33
Steam domes, one to each boiler, height, inches	. 42
Main steam pipe to engine, diam., inches	. 10

The contractor's guarantees are:

First. A delivery of 15,000,000 U. S. Standard gallons per diem of 24 hours, against a head of 185 feet above water pressure gauge, with a piston speed of 120 feet per minute.

Second. A duty of engine and boilers as a plant, of 100,000,000 foot pounds for each 100 pounds of coal consumed, with a steam pressure of 80 pounds.

Third. A duty of engine and boilers as a plant, of 90,000,000 foot pounds for each 100 pounds of coal consumed, with a steam pressure of 80 pounds, for 1800 hours operation during a period of 90 days, as required by your printed specification dated Sept. 27th, 1883.

The compliance of the machinery with the first and second of these guarantees it has been my duty to investigate and report on. The compliance of the machinery with the third guarantee being otherwise provided for in your printed specification noted above.

The requirements of your printed specification under which the machinery was furnished are:

First. A capacity trial of 24 hours duration.

Second. A duty trial of 48 hours to follow the capacity trial without stopping the machinery.

Third. A working trial of 1800 hours to be accomplished within the limits of three months operation of the machinery.

The working trial to commence within two weeks of the completion of duty and capacity trials. The capacity trial of 24 hours duration began at 10:30 A. M. Tuesday, Dec. 1st, and terminated at 10:30 A. M. Wednesday, Dec. 2d, with the following results:

Counter on engine, 10:30 A. M., Dec. 1st	378,079
Counter on engine, 10:30 A. M., Dec. 2d	400,078
Revolutions of engine in 24 hours	21,999
Revolutions of engine per hour	
Revolutions of engine per minute	15.27708

Mean area plunger "A" engine:

$$34.02^{2} \times 0.7854 - \frac{6^{2} \times 0.7854}{2} - 894.854$$
 sq. inches

Mean area plunger "B" engine:

$$34.03^2 \times 0.7854 - \frac{5^2 \times 0.7854}{2} - 895.388 \text{ sq. inches.}$$

The printed specification requires the capacities of the pumps to be estimated by the following formula, in which the efficiency of the pumps is taken at 0.97 or with an allowance of 3 per cent. "for loss of action due to the probable imperfect filling of the pumps."

$$Q=145.122\times A\times N\times S$$
,

in which

Q—delivery of pumps in U. S. gallon per diem of 24 hours. 145.122—a constant representing the effective capacity of pumps per sq. inch of plunger for a travel of one foot per minute for a period of 24 hours, and is obtained as follows:

$$\frac{1 \times 12 \times 1440 \times 2 \times 0.97}{231} = 145.122$$

A—the sum of the effective areas of all the pump-plungers in sq. inches,

N=average revolutions of engine or double strokes of pumpplungers, per minute,

15.27708

S-average strokes of both pump-plungers in feet,

and delivery of pump during capacity trial was

Q=145.122 \times 1790.242 \times 15.27708 \times 3.9831=15,809,078.617 gallons for a period of 24 hours.

But the contract requires a daily delivery of 15,000,000 gallons at a piston speed of 120 feet, or \(\frac{120}{3.0831\times2} = 15.06365 \) revolutions per minute, whence the capacity of the pumps at contract speed becomes \(\frac{145.122\times1790.242\times15.06365\times3.9831 = 15.588,209.97 \) gallons.

Comparing the contractor's guarantee and actual performance of the pumps we have:

Guaranteed capacity in 24 hours at 120 feet piston speed,

Subsequent to the duty trial an extra trial for capacity was made for a period of one hour, during which time the engine was operated at an average speed of 18 revolutions per minute, corresponding to a daily delivery of

145.221×1790.242×18×3.9831==18.626,256.43 gallons,

showing an excess above the nominal capacity of pumps of 3,626,256.43 gallons per diem of 24 hours.

During the contract capacity trial of 24 hours, the steam and water pressure gauges were read and recorded every 15 minutes, with the following averages:

Steam pressure (at engine), pound	ds	78.895
Error of gauge	+2.000	80.895
Less water column on gauge		2.072
Corrected gauge pressure		78.823
Water pressure by gauge, pound	s	79.4427
Center of water pressure gauge to	o surface of water in pump well { pounds feet	10.652 24.5

The coal burned during the capacity trial of 24 hours was weighed on a sealed scale in the boiler-room in uniform charges of 275 pounds to each furnace.

The furnaces under the four boilers used for the capacity trial were fired in rotation every 15 minutes, with one extra charge of 275 pounds to No 1 furnace at 4:03 A. M. Dec. 2d, one extra charge to same furnace at 7:50 A. M. same date, and one extra charge divided equally between No. 3 and 4 furnaces at 10:08 A. M. Dec. 2d, making a total consumption for 24 hours of 27,225 pounds, or at the rate of 1134.37 pounds per hour.

The trial for duty began at 10:30 A. M. Wednesday, Dec. 2d, and terminated at 10:30 A. M. Friday, Dec. 4th, embracing an uninterrupted operation of the machinery for a period of 48 hours, previous to which time the machinery had operated under conditions of capacity trial for a period of 24 hours, making a total run without break for any purpose whatever of 72 hours.

During the duty trial the steam and water pressure gauges and the engine counter were read and recorded every 15 minutes.

The barometer, temperatures of air in engine room, injection to condenser and hot well were read hourly.

The water levels in boilers, steam gauges on boilers and temperatures of feed water to boilers were read half-hourly.

The coal to furnaces was weighed in the boiler-room in uniform charges of 275 pounds each, and dumped in front of the boilers; and during the duty trial the furnaces and boilers, of which three were used, were fired at intervals of 15 minutes, in regular rotation.

The time of firing each charge to each furnace, the time of cleaning or slicing the respective fires, and the weights of ash and clinker from the furnaces were regularly entered in the coal record by an assistant, stationed in the boiler-house.

During the 48 hours of duty trial there were small quantities of coal thrown back at times from the regular charges weighed to the boilers, at the discretion of the contractor, to be used in case of necessity after the cleaning of fires.

The net accumulations from the quantities of coal weighed and charged to the respective furnaces was weighed back and credited in the coal record at the end of trial.

The coal burned was of the quality furnished the pump-house under the contract of your Board with the coal dealers.

The particular coal burned during the trials was from the mines of the Philadelphia and Reading R. R. Coal Co.

This was fired by the regular fireman on watch during the trials, under the direction of the contractor.

The difference of surface of water in pump-well and center of water pressure gauge was read and recorded hourly from a float gauge placed in the pump-well.

The management of the machinery was in the discretion of the contractor, it being my duty to measure the work done, the fuel consumed in doing it, and to observe that the steam and water pressures and piston speed of engine complied with the contractor's stipulated conditions.

The following are the results of the trial for "duty:"	
Engine counter at 10:30 A. M. December 2d	400,078
Engine counter at 10:30 A. M. December 4th	433,045
Revolutions in 48 hours	42,967
Revolutions per hour	895.146
Revolutions per minute	14.9191
Piston speed per minute during 48 hours of duty trial, feet	118.848-
Mean head by water pressure gauge, 193 readings, pounds	79.700
Mean difference, center of water pressure gauge and surface of water	
in pump-well { feet pounds	23.7025
pounds	10.305
Contract allowance for friction of water passages in pumps, pounds.	1.000
Total head as per printed specification, pounds	91.005
Coal charged to boilers No. 2, 3 and 4 during 48 hours of duty trial,	
192 charges of 275 pounds	52,800.
Coal weighed back at 10:30 A. M. Dec. 4th, pounds	992.
Coal burned during trial, pounds	51,80 8 .
Coal burned per hour, pounds	1,079.333
Coal burned per minute, pounds	17.9889

. .;

And duty obtained as per formula of printed specification, $D = \frac{200 \times A \times P \times N \times S'}{C}$

where D—duty in foot pounds per hundred pounds of coal.

A—aggregate mean area of pump-plungers—1790.242 sq. inches.

P—mean pressure per sq. inch of pump-plungers—91.005 pounds.

N—mean revolutions, or double stroke of engine—14.9191 per minute.

S—average stroke of both pump-plungers—3.9831 feet, then,

 $D = \frac{200 \times 1790.242 \times 91.005 \times 14.9191 \times 3.9831}{17.9889} = 107,638,148.482$

foot pounds.

The average pressure in steam pipe from 193 readings of steam gauge	
during the duty trial was, pounds	80.276
Error of gauge, 2.000 pounds	82.276
Less water column on guage	
Corrected steam pressure, pounds	

Comparing the contractor's guarantee and the actual performance of the machinery, we have:

or the machinery, we have.	
Guaranteed duty for 100 pounds of coal burned during	
48 hours of contract trial	100,000,000 foot pounds
Actual duty per 100 pounds of coal burned during	
48 hours of trial	107,638,148.482 foot pounds
Excess of duty over contractor's guarantee	7,638,148.482 foot pounds
or over 7.6 per cent.	

Upon completion of the 72 hours operation for duty and capacity trials, the bearings all around the engine were examined and none found warmed.

In addition to the data already noted for duty trial indicator diagrams from all the steam cylinders were taken regularly every hour for 48 hours, and indicator diagrams from the pumps were taken hourly during the last 24 hours of trial.

Subsequent to the trials for duty and capacity the steam and water pressure gauges were removed from the engine and boilers and compared with an accurate test gauge for correction of errors of readings.

The general performance of the engine during the trials was very satisfactory, and I venture the opinion that the continuous operation of the machinery will be satisfactory to your Board and be beneficial to the water department.

During Dec. 7th the boilers and furnaces were tested for economy, in order to separate the work of the engine from the work of the boilers, and to compare the duty of the engine with the duties obtained from other pumping engines upon the basis of a uniform boiler economy.

The results of which, together with a more detailed report upon the trials of the machinery, I will submit at an early date.

Very obediently yours,

JOHN W. HILL.

Buffalo, N. Y., Dec. 8th, 1885.

GENERAL REPORT.

In the preliminary report, submitted Dec. 8th, upon completion of the trials, I confined myself to the requirements of the printed specification and the guarantee of the builder in his proposition to the Water Commissioners.

In order that the record of the trials may be more fully presented to you and others interested in pumping engines of the first class, I have carefully reviewed the data taken at Buffalo, and append the following statement of dimensions of machinery and results of the several tests of engine and boilers.

DESCRIPTION OF ENGINE.

Style.—Compound condensing, beam rotative, cylinders and pumps arranged horizontally, high-pressure cylinders over low-pressure cylinders, low-pressure cylinders in line with the pumps, steam cylinders, jacketed heads and sides; pumps, double-acting plunger, central packed gland; beam arranged vertically, with end pins connected by short links with cross-heads of high and low-pressure pistons; single shaft and fly-wheel, with two cranks at quarters; one high-pressure steam cylinder, one low-pressure steam cylinder, and one pump to each half of engine.

DIMENSIONS OF ENGINE.—STEAM CYLINDERS.	
H. P. cylinders (2), diam., inches	3 3 -
H. P. piston rods (single), diam., inches.	4.5
L. P. piston rods (double), diam., inches	
· · · · · · · · · · · · · · · · · · ·	5. 47. 8 75
Stroke H. P. and L. P. pistons—engine "A"	
Stroke H. P. and L. P. pistons—engine "B"	47.72
Steam cylinders (4) jacketed.	
Steam cylinders, heads (8) jacketed.	
Clearance H. P. and L. P. cylinders	0.025
STEAM VALVES AND PORTS.	
Cut-off valves, style, double-beat puppet.	
Cut-off valves, diam. upper seat, inches	9.125
Cut-off valves, diam. lower seat, inches	7.875
Cut-off valves, lift, inches	0.75
Cut-off valves, area of opening, sq. inches	40 055
Intermediate valves, style, gridiron slides.	
Intermediate valves, 5 openings, in seat	1"×13"
Intermediate valves, area of openings, sq. inches	65.
Exhaust valves, style, gridiron slides.	-
Exhaust valves, 10 openings in seat	1"×13"

Exhaust valves, area of openings, sq. inches	,,
Steam ports H. P. cylinders $3"\times11"$ Steam ports H. P. cylinders, area, sq. inch.33.Intermediate ports, from H. P. to L. P. cylinders $3.5"\times20"$ Intermediate ports, area, sq. inchs.70.	,,
Steam ports H. P. cylinders, area, sq. inch	,,
Intermediate ports, from H. P. to L. P. cylinders 3.5"×20' Intermediate ports, area, sq. inchs	
	5
Embourt month I. D. culindons	5
Exhaust ports L. P. cylinders	
Exhaust ports L. P. cylinders, area, sq. inches 131.25	
CONDENSERS AND AIR PUMPS.	
Condensers, style, "jet."	
Condensers, number	
Condensers, diam., inches 54.	
Condensers, height, inches	
Air pumps, style, single-acting.	
Air pumps, number4.	
Air pumps, diam., inches	
Air pumps, stroke, inches 27.	
Exhaust pipe to condenser, diameter, inches 14.	
Injection pipe to condenser, diameter, inches 6.	
STEAM PIPES.	
Main steam pipe, diam., inches	
Main steam pipe, length, feet	
Branch steam pipe (2), diam., inches	
In the main steam pipe at the engine, just above the	
branch pipes, there is placed a quick-acting, rotative	
throttle valve, and in each branch pipe there is one	
open way screw valve.	
Right angle bends in main steam pipe 4.	
The steam pipe is provided with "variation" or expan-	
sion joints to compensate for alterations of length at	
different temperatures.	

BEAMS, CRANKS, SHAFT AND FLY-WHEEL.

BEAMS, CRANKS, SHAFT AND FLY-WHEEL.	
Beams, one to each side (A and B) of engine.	
Beams, center to center of end pins, inches	76.5
Beams, center bearings	12"X21"
Beams, upper end pins	7"×17"
Beams, lower end pins	7"×8"
Crank pins (2)	- T
Crank shaft, diam. at fly-wheel, inches	16.5
Crank shaft, diam. at bearings, inches	,15.0
Fly-wheel, diam., feet	20.0
Fly-wheel, weight, tons	25.
Total weight of engine, pounds	00,000.
FEED PUMPS.	•
The beam shaft upon each side of engine has a prolongation—of reduced diameter—inwards, towards center line between the two sides of engine. This shaft is provided with a standard bearing near its inner end, and has keyed to it two small, equal armed beams, the larger of which works the air pumps, and the smaller works the boiler feed pumps. Feed pumps, style, single-acting plunger.	
Feed pumps, number	4.
Feed pumps, diam., inches	6.
Feed pumps, stroke, inches	II.
PUMPS.	
Pumps, style, double-acting plunger with central packed g	land.
Pumps, number	2.
Pumps, diam. plunger "A," inches	34.02
Pumps, diam. plunger "B," inches	34.03
Pumps, diam. plunger-rods (2), inches	6.
Pumps, stroke plunger "A," inches	47.875

THE BUFFALO CITY WATER WORKS.	169
Pumps, stroke plunger "B," inches	47.72
guided in the hub of a cage which screws down over the outside of valve seat. The valve seats are of	
composition, screwed into the diaphragms of valve	
chambers, without bridges or ribs, and presenting an unobstructed circular waterway when the valve rises	
from the seat.	
Pump valves, sets to each pump	4.
Pump valves, number in each set	252.
Pump valves, diam. of opening in seat, inches	1.3125
Pump valves, diam. of rubber disk, inches	1.75
Pump valves, thickness of rubber disk, inches	0.5
Pump valves, lift, inches	0.3125
Pump valves, area through seats, one set, sq. inches	340.956
Pump valves, area through waterway at 5-16 inch lift	
sq. inches	432.952
SUCTION AND DISCHARGE PIPES.	
Principal suction pipe, diam, inches	36.
Branch suction pipe (2), diam, inches	30.
Principal discharge pipe, diam., inches	36.
Branch discharge pipe, (2), diam., inches	30.
Stop valves in both branches of suction and discharge p	oipes.
CALCULATED DATA.	
Volume of high-pressure cylinder, including clearance,	24.0025
cu. ftVolume of low-pressure cylinder, including clearance,	24.0237
volume of comencessure eviller inclining clearance.	
- · · · · · · · · · · · · · · · · · · ·	ロブ ロクカミ
and clearance of high-pressure cylinder, cu. ft Ratio volume of low-pressure to volume of high-pres-	97.0265

Volume of displacement, L. P. pistons (2), per hour,	
during 48 hours of duty trial, cu. ft	330,891.4
Volume of clearance, L. P. cylinders (2), per hour,	
during 48 hours of duty trial, cu. ft	8,422.3
Velocity of flow per second for the water through pump	
valves for a plunger travel of 120 feet per minute, ft.	2.6628
Displacement of both pump plungers per revolution of	
engine, galls	742. 8 58

BOILERS.

The boilers furnished by the contractor as part of his plant are of the return tubular type, set in independent furnaces, with independent smoke, steam and feed water connections, whereby any one or more of the boilers may be operated or laid off at will without interfering with the operation of the remainder of the battery.

The boilers are set to have three transits of the hot gas for the full length of shell, once under the shell, thence forward through the tubes, and finally back over the top of shells to the main flue at the rear end of setting. There are six boilers in the battery of the following dimensions:

Diam. of shells, inches	6 6 .
Length of shells, feet	18.
Tubes, number	8o.
Tubes, diam. outside, inches	3.5
Tubes, length, feet	18.
Grate, length of bars, inches	6 8.
Grate, width of furnace (each), ft	6.
Steam dome, one to each boiler, diam., inches	33⋅
Steam dome, one to each boiler, height, inches	42.
Heating surface, shell	
Heating surface, tubes 1319.472	
Heating surface, heads 18.413	
Total, one boiler, sq. ft	1502.392

THE BUFFALO CITY WATER WORKS.	171
Super-heating surface, one boiler, sq. ft	90.206
Grate surface, one boiler, sq. ft	34.
Ratio heating to grate surface	44.188
Cross-section of tubes, sq. ft	4.261
Ratio grate surface to cross-sections of tubes	7.979
Grate to boiler, front, inches	32.
Grate to boiler, back, inches	30.
Grate to boiler, floor of ash pit, inches	20.
Bridge wall concentric to boiler shell.	
Bridge wall to boiler shell, inches	6.
Chimney, cross-section, 8'×8' sq. ft	64.
Chimney, height, ft	125.

In constructing the furnace fronts of the boiler setting, the contractor has provided a double set of fire doors, one immediately above the grate level, and the other about 41/2 inches above the first, for charging and cleaning fires, which enables the fireman to distribute the coal over the grate to better advantage than through the usual single bank of doors at grate level, and to slice and clean fires through the lower doors without exposing the heated shell of the boiler to the chilling currents of cold air entering the furnace.

The chimney is immense for the present number of boilers, and entirely out of proportion to the number used in the trials for "capacity," "duty," and for test of economy of boilers, which were four for the first trial and three for each of the others, respectively.

During the duty trial and trial for economy of boilers with three boilers in use, a chimney 4 ft. 6 inches square, would have given better results in economy than the present stack.

I regard the stack as ample for 15 to 18 boilers of same size.

CAPACITY AND DUTY TRIALS.

The complete record of data, owing to the duration of trials and frequency of observation, are too cumbersome for publication, and are only useful as showing the uniformity of conditions under which the engine and boilers were worked.

Complete tables of data are therefore omitted, and the first and last readings and averages at the several stations of observation alone are given.

CAPACITY TRIAL.

This trial lasted 24 hours, during which interval of time the following data was taken:

Steam gauge boilers No. 1, No. 2, No. 3 and No. 4, water gauges same boilers, and temperature of feed water to boilers at beginning and end of trial and regularly at half-hourly intervals between, with the following results:

Steam pressures at 10:30 A. M. Dec. 1st.	, 1885:		
Bollers No. 1.	No. 2.	No. 3.	No. 4
Pressure by gauge 87.00	83.00	81.00	83.00
Correction—2.50	+0.5	+2.00	+1.00
Corrected pressure 84.50	8 3. 50	83.00	84.00
Steam pressure at 10:30 A. M. Dec. 2d, 1	:88 5: .	•	
Pressure by gauge 86.00	82.00	80.00	82.00
Corrected pressure 83.50	82.50	82.00	83.00
Steam pressure average for 24 hours, 49	readings:		
Boilers No. 1.	No. 2.	No. 3.	No. 4.
Pressure by gauge 84.74	80.8	79.4 0 6	81.09
Corrected pressure 82.24	81.3	81.406	82.09

WATER GAUGES.

WAIEK	GAUGES,		
nuts on gla	ass tubes at 10:3	о А. М. Dec. 1	st, 1885:
No. 1.	No. 2.	No. 3.	No. 4.
7.25	, 5-5	5. 25	5.
	23.00	nches.	
1:			
No. 1.	No. 2.	No. 3.	No. 4.
5.75	6.00	4.75	3.75
	No. 1. 7.25	No. 1. No. 2. 7.25 5.5 23.00 il: No. 1. No. 2.	nuts on glass tubes at 10:30 A. M. Dec. 1 No. 1. No. 2. No. 3. 7.25 5.5 5.25 23.00 inches. 1: No. 1. No. 2. No. 3.

20.25 inches,

TEMPERATURE OF FEED WATER.

Dec. 1.	Dec. 2.	Average.
10:30 A. M.	10:30 A. M.	for 24 hours (49 readings).
186.o	197.0	193.75

During the capacity trial the coal was weighed in uniform charges of 275 pounds by an officer of the water department, upon a new sealed scale placed in the boiler-room, and charged to the furnace in which it was finally burned.

For this trial furnaces and boilers No. 1. No. 2, No. 3 and No. 4 were used.

From previous experiments with the plant it was found that under the customary conditions of work the consumption of coal was about 1100 pounds per hour, which divided between four furnaces made the charge to a furnace for one hour consumption 275 pounds.

The firings were fixed at regular intervals of 15 minutes, in uniform rotation, as per the following extract from the coal weigher's records:

Date, Dec. 1st, 1885,-A. M.

Time.	Furnace 1.	Furnace 2.	Furnace 3.	Furnace 4
Io:30				275
:45			275	
12:00		275		
:15	275			
:30				275
:45			275	
1:00		275		
:15	275			
:30				275

The furnaces had been fired in the following order previous to commencement of trial:

No. 1, 15 minutes before; No. 2, 30 minutes before; No. 3, 45 minutes before; No. 4, one hour.

This order of consumption was observed throughout the trial, excepting at 4 o'clock A. M. Dec. 2d, an extra charge of 275 pounds was delivered to No. 1 furnace, and at 4:15 A. M., or a quarter hour

later, it took its regular charge of 275 pounds; again at 7:50 A. M., same date, this furnace (No. 1) required an extra charge of 275 pounds in addition to its regular charge at 7:15 A. M.; and at 10:08 A. M. a charge of 275 pounds was equally divided between furnaces No. 3 and No. 4, making total consumption of coal:

Regular charges, 96, of 275 pounds	26,400
Extra charges, 3, of 275 pounds	805
Total	27,225

The fires were cleaned in the following order:

Furnace No. 1.	Furnace No. 2.	Furnace No. 3.	Furnace No. 4
Dec. 1st- 6:18 P. M.	6:03 P. M.	8:48 P. M.	8:33 P. M.
Dec. 2d—12:18 A. M.	I:03 A. M.	12:48 A. M.	I:33 A. M.
" " 7:50 A. M.	8;00 A. M.	8:48 A. M.	7:33 A. M.

Ash, clinker and unburnt coal filtered through the grates were weighed back as follows:

At 1:15 A. M.	December	ad	1264 pounds.
At 7:43 A. M.	December	2d	512 pounds.
		2d	

Percentage of non-combustible for capacity test,

The records of the engine-room consisted of the readings of e2-gine counter, steam gauge in pipe, water gauge connected with the force main every fifteen minutes; temperature of air, injection to condensers, and overflow from hot well and barometer hourly; and the reading of vacuum gauge half-hourly, with the following initial and final readings and averages:

Readings at 10:3	OA. M. December 1st:		
Steam pres.	Counter.	Water pres.	Vacuum.
8o	378,079	8o	25.75
Corrected,			
79.923			

Readings at 10):30 A. M. Dec. 2d:		
Steam pres.	Counter.	Water pres.	Vacuum.
8 o	400,078	8o	26.25
Corrected,			
79.928			
Mean for 24	hours:	•	
Steam pres.	Counter.	Water pres.	Vacuum.
97 readings,	97 readings,	97 readings,	49 readings,
78.895	21,999	79-4427	26.091
Corrected,	Revolutions.		
78.823			
Revolutions in 2.	4 hours		21,999.
Revolutions per	hour		916.625
Revolutions per	minute		15.27708
The initial	and final reading	s and means for 24 h	ours of the
	gs are given in the		
•	•	tone in ing tubici	
At 10:30 A. M.			
Air.	Barometer.	Injection.	Hot Well.
66	29.73	44	105
At 10:30 A. M.			
Air.	Barometer.	Injection	Hot Well.
70	29.56	44	102
Mean for 24 h			
Air.	Barometer.	Injection.	Hot Well.
25 readings,	25 readings,	25 readings,	25 readings,
68.083	29.671	43.83	99.875
Recapitulat	tion of averages an	d totals for boiler and	engine-room
during 24 hou	irs of capacity trial	:	
Steam pressure a	at boilers-No. 1, poun	ds	82.24
	No. 2, poun	ds	81.30
	No. 3, poun	ds	81.406
	No. 4, poun	ds	82.09
Average of all ga	8ì.759		
Temperature of	193.75		
Total coal burne	27,225.		
Total ash and cli	2,691.		
Steam pressure	78.823		

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Vacuum, inches.	26.091
Water pressure by gauge, pounds	79.4427
Temperature of air, Fahr.	68.083
Temperature of injection water, Fahr	43.83
Temperature of overflow from hot well, Fahr	99.875
Barometer, inches	29,671

The mean difference of center or water pressure gauge and surface of water in pump-well from random readings of the float gauge, during the capacity trial, was 24.5 feet=10.652 pounds; and total head under which pumps worked, according to requirement of printed specification:

By water pressure gauge, pounds	79-4427
By difference water pressure gauge and surface of water in pump-	
well, pounds	10.6520
By allowance for friction, pounds	1,0000
Total head, pounds	91.0947
and duty developed during capacity trial:	

(P)

• • •			2.0
100×895.121×3.	9831X4	X91.0947X	21.999.

(S)

—104,976,**2**63.01

(R)

27225

(C)

foot pounds.

(A)

176

During the latter part of the 24-hour capacity trial the contractor decided to use but three boilers for the trial for duty, and at 10:30 A. M. Dec. 2d, No. 1 boiler was cut off by closing the steam valve, feed cock and damper.

Under the printed specification I am of the opinion that the contractor could have selected any well-known anthracite coal for the purpose of his duty trials, and as there are several brands the combustible of which is considerably higher than that actually burned during the trial, he might have selected one of these and improved his duty accordingly.

The use of the ordinary stock coal commonly burned at the pumphouse shows great faith upon the part of the contractor in the ability of his machinery to comply with the guarantees of the contract, the conditions of which compared with most trials for high duty would be regarded as very unfavorable.

There are several brands of anthracite, the efficiency of which, when properly burned under steam boilers, is 94 to 95 per cent of the weight of the coal, and had the contractor required coal of this kind his duty would have been increased in the ratio of 95 or 94 to 90.1157, or the duty for capacity trial would have been

foot pounds per 100 pounds of coal.

During the extra capacity trial, which was made as a test of the possible speed of engine in case of emergency, the steam and water pressure gauges and engine counter were read every five minutes, with the following averages:

Steam pressure at engine, corrected, pounds	83. 0 86
Water pressure, pounds	65.5
Revolutions for one hour	1080.
Revolutions per minute	18.

DUTY TRIAL.

The final readings at the different stations for the capacity trial under the requirements of the printed specification, became the initial readings for the 48-hour duty trial, and were as follows, for beginning and ending of trial and as an average for whole trial of 48 hours duration:

Stations.	Dec. 2, 10:30 A, M.	Dec. 4. 10130 A. M.	Average for 48 hours
Steam pressure at boilers-No. 2	82.5	83.5	82.817
No. 3	82.0	84.0	83.651
No. 4	83.0	84.0	83.286
Water level in boilers-No. 2	6.	6.25	
No. 3	4.75	5-5	
No. 4	3.75	4.75	
Temp. of feed water to boilers	197.0	178.	186.661
Engine counter	400,078	443.045	42.967
Steam pressure at engine	79.928	81.928	80.204
Vacuum	20.25	26,00	25.975
Water pressure	80.00	70.00	79.70
Difference levels of water pres, gauge and			
surface of water in pump-well	24.475	24.425 ft.	23.702
Temp. air engine-room	70.0	73.0	70,177
Temp. injection water	44.0	42,0	43.437
Temp. overflow from hot well	99 0	92.0	92.760
Barometer	29.56	29.19	29.149

The coal was burned during the 48 hours of contract duty trial and during the extra hour of trial (added to avoid a possible reduction of the fires at end of 48 hours) in the same manner as for the previous 24 hours of capacity trial, in uniform charges of 275 pounds, and firing the furnaces respectively at intervals of 15 minutes.

For the 48-49 hours of duty trial furnaces No. 2, No. 3 and No. 4 were used, burning the same coal per hour on three grates as was previously burned on four grate's during the capacity trial.

The four furnaces in use for the capacity trial represented an aggregate area of grate surface of 136 sq. feet, and the coal burned per hour 1100 pounds, and the rate of consumption per sq. foot of grate surface

The three furnaces in use for the duty trial represented an aggregate area of grate surface of 102 sq. feet, and the coal burned per hour for 48 hours 1079.333 pounds, and the rate of consumption per sq. foot of grate surface

¹¹⁰⁰ 136 8.09 pounds per hour.

pounds per hour.

For the 49 hours of duty trial the coal was burned on same grate surface as for 48 hours previous, at the rate of 1079.755 pounds per hour, or 1079.755_10.586 pounds per sq. foot of grate.

During the 48 hours of duty trial there was weighed up and charged 275 pounds of coal for every 15 minutes interval of the time, each one of the three furnaces used receiving a charge every 45 minutes.

From the charges, at the discretion of the contractor, small quantities were thrown back into a space allotted for the purpose, to be drawn upon in the event of the steam pressure going down during the operation of cleaning fires.

Portions of this coal were so used at different times and the remainder was weighed back and deducted from gross coal charged up to 10:30 A. M. Dec. 4th. For the last hour of trial 1100 pounds were used. The work of the machinery for this hour was not a part of the duty trial required under the printed specification.

The duty for 48 hours of duty trial developed by the formula of the printed specification is given in the preliminary report as 107,-638,148.482 foot pounds per 100 pounds of coal burned under the boilers.

The duty for the entire 49 hours of trial is deduced from the following data:

Engine counter at 10:30 A. M. Dec. 2d	400.078.
Engine counter at 11:30 A. M. Dec. 4th	443.936.
Revolutions for 49 hours	43.858.
Head pumped against, by water pressure gauge, mean of 197 readings	79.684
Difference center of water pressure gauge and surface of water in	
pump-well, mean of 50 readings, 23.7199 feet	10.313
Contract allowance for friction of water passages of pumps	1.000
Total head, pounds	90.997

The coal burned during 49 hours was 196 charges of 275 pounds	53,900.
Less weighed back at 10:30 A. M. Dec. 4th	992.
Net coal consumed, pounds	5 2,9 08.
Mean area of both plungers, sq. inches	895.121
Mean stroke of both plungers, feet	3.9831

foot pounds per hundred pounds of coal burned.

It is elsewhere shown in this report that the coal burned during the 48-49 hours of duty trial contained 10.367 per cent. of non-combustible, and that this coal was from the stock in the coal-houses of the pumping station at time of trial; that it was the coal furnished the Water Department by the coal dealers under their yearly contract.

In addition to which it was taken as it came, without attempt to improve its quality by culling out inferior specimens, dirt or stone.

Under the printed specification I am of the opinion that the contractor could have demanded any one of several well-known brands of anthracite coal, which from many tests of their quality have shown an efficiency of combustible of 94 to 95 per cent. of the original weights, and improved his duty accordingly.

Estimating the duty with coal showing not more than 6 per cent. of non-combustible, we have:

$$\begin{array}{c} 107.638,148.482 \times 94 \\ 89.633 \end{array} = 112.882,375.43$$

foot pounds per 100 pounds of coal.

It has been customary of late years to assume good boiler performance, with good coal and skilled fireman, at an evaporation of ten pounds of steam per pound of coal from temperature of feed water, and I have made several trials of steam boilers with anthracite and bituminous coal, with temperatures of feed water at 180 Fahr., or more, and in one instance with a temperature of feed water of 107 Fahr., and obtained over ten pounds net steam per pound of coal burned.

In several modern instances of contracts for pumping engines, where the construction of boilers was not a part of the contract for engine, or where new engines for old works having sufficient boiler capacity have been contracted for, the guaranteed duty has been based upon an evaporation by the boilers of ten pounds net steam per pound of coal, or the duty instead of being so many foot pounds per hundred pounds of coal, is stated as so many foot pounds per 1000 pounds of steam delivered to the engine.

Your previous contract with Henry R. Worthington for the 15,000,000 gallon, compound, direct-acting and duplex-pumping engine, the contract trials of which I had the honor to make in July, 1882, contained a guarantee of 70,000,000 foot pounds duty per 100 pounds of coal burned upon an evaporation by the boilers of ten pounds of steam per pound of coal.

The contract of E. P. Allis & Co., Milwaukee, with the City of Allegheny, Pa., contained a guarantee of 95,000,000 foot pounds duty per 100 pounds of coal burned upon an evaporation by the boilers of ten pounds of steam per pound of coal.

The contract of E. P. Allis & Co., Milwaukee, with the City of Decatur, Ill., contained a guarantee of 80,000,000 foot pounds duty per 100 pounds of coal burned upon an evaporation by the boilers of ten pounds of steam per pound of coal.

The contract of Robt. Wetherill & Co., Chester, Penn., with the City of Philadelphia, contains a guarantee of 95,000,000 foot pounds duty per 100 pounds of coal burned with an evaporation by the boilers of ten pounds of steam per pound of coal.

The contract of Robt. Wetherill & Co., Chester, Penn., with the City of Cincinnati contains a guarantee of 90,000,000 foot pounds duty upon actual delivery of water into Eden reservoir per 100 pounds of coal burned upon an evaporation by the boilers of ten pounds of steam per pound of coal.

In the recent trials of the engine constructed by E. P. Allis & Co., for the Hannibal, Mo., Water Company, the duty per 100 pounds of

coal is based upon an evaporation by the boilers of ten pounds of steam per pound of coal.

Assuming the contract for this engine contained a guarantee of duty upon an evaporation by the boilers of ten pounds of steam to one of coal burned, then we should have had a much better duty of the engine per se.

The duty of the plant per hundred pounds of coal burned, in the several trials, for capacity, duty and for performance of boilers, other conditions alike, will vary as the economy of boilers, or as the weight of steam from temperature of feed water per unit of fuel.

The duty upon the actual consumption of coal during the test of boilers was 110,275,188.85 foot pounds, with an evaporation from temperature of feed water of 8.7584 pounds of steam per pound of coal. Comparing this duty with the duty obtained during the 48 hours of duty trial, it is fair to infer the evaporation per unit of feed from temperature of feed water to have been less for the duty trial and less in proportion of the "duties" of the two trials.

Upon this assumption the steam per pound of coal from temperature of feed for the duty trial was

$$\frac{107.638.148.5 \times 8.7548}{110,275,188.85} - 8.549$$

pounds; and duty of engine or plant upon an evaporation by the boilers of ten pounds of steam per pound of coal would have been

$$\frac{107,638,148.5\times10}{8.549} = 125,907,297$$

foot pounds.

As an evidence of the quality of the engine considered independently of the boilers which you have purchased, I have brought the duty of it in comparison with the duties of several other celebrated pumping engines upon a uniform basis of ten pounds of steam per pound of coal.

ENGINE. DUTY.

Gaskill, compound condensing, rotative beam engine, double-acting plunger-pumps, cylinders and heads steam-jacketed, capacity in 24 hours 15,000,000 gallons.

Buffalo, N. Y., Dec. 2-4, 1885.

Test 48 hours duration..... 125,907,297.

ENGINE. DUTY. Worthington, compound condensing, duplex direct-acting engine, double-acting plunger-pumps, L. P cylinders and heads steamjacketed, capacity in 24 hours 15,000,000 gallons. Buffalo, N. Y., July 3-4, 1882. Test of 20 hours duration..... The above engines are each of 15,000,000 gallons daily capacity and stand side by side in the same pump-house, pumping in the same service. Reynolds, 2 engines, compound condensing, crank and fly-wheel, single-acting plunger-pumps, cylinders steam jacketed, capacity (each engine) in 24 hours 6,000,000 gallons. Allegheny, Pa., Aug. 30th, Sept. 4th, 1884. Test of 24 hours duration—No. 2 101,619,143. Test of 6 hours duration—No. 2..... 107,009,618. Leavitt, compound condensing, rotative beam engine, bucket and plunger-pumps, cylinders and heads steam jacketed, capacity in 24 hours 5,000,000 gallons. Lyon, Mass., Dec. 10-12, 1873. Test of 52 hours duration.... 121,153,693. Leavitt (2), compound condensing, rotative beam engines, bucket and plunger-pumps, cylinders and heads steam jacketed, capacity in 24 hours (each engine) 5,000,000 gallons. Lawrence, Mass., May 2-4, 1876. Gaskill, compound condensing, rotative beam engine, double acting plunger-pumps, cylinders and heads steam jacketed, capacity in 24 hours 4,000,000 gallons. Saratoga, N. Y., Nov. 1-2, 1882. Hamilton, compound condensing, rotative beam engine, Simpsom style, bucket and plunger-pumps, unjacketed cylinders, capacity in 24 hours, 8,700.000 gallons.

Chicago, April 18-22, 1876.

Test of 48 hours duration	89,498,058.
Test of 48 hours duration	85,605,774.

The engines above enumerated, with the exception of the 15,000,000 gallon Worthington in your house, are all compound condensing, crank and flywheel engines, and represent the highest results with pumping machinery in point of economy, and with the same exception are all of modern design from the hands of eminent engineers.

From a comparison of the steam and water diagrams of "B" half of engine from 10:00 A. M. Dec. 3, to 7:00 P.M., same date, it appears that of the total power developed in the steam cylinders, 93.2 per cent. was utilized in the work of the pumps; and a similar comparison of the steam and water diagrams of "A" half of engine, from 8:00 P. M. Dec. 3d, to 10:00 A. M. Dec. 4th, shows an efficiency for the pumps of 97.7 per cent. of total work, or average useful efficiency of engine 95.4 per cent.

In the following table are given the principal results from measurements of the steam diagrams:

Average pressure in steam pipe, pounds		80.204
Average vacuum, inches		29.149
Average vacuum, pounds		14.309
	"A"	"В"
Initial pressure H. P. cylinder	79.505	80.179
Cut-off in decimal of stroke, actual, H. P. cylinder	0.3531	0.3897
Terminal pressure L. P. cylinder, absolute	8.421	8.52
Counter pressure at mid-stroke, L. P. cylinder, absolute	2.238	2.372
Expansion by volumes	11.437	10.36
Expansion by pressure	11.6507	II. 125.1

ECONOMY OF BOILERS.

Subsequent to the trial of engine for duty the boilers were separately tested for economy during a period of 10 hours, with the general conditions of work as nearly like the duty trial as it was possible to have them.

The data of the engine-room for this trial was limited to the readings required to estimate the duty of the plant, in addition to a test of the quantity of steam expanded in maintaining the jackets of "B" engine.

The coal was weighed to the boilers in charges of 275 pounds, and the furnaces fired at regular intervals of 15 minutes, as in the duty trial.

During the latter half of boiler trial it was apparent that the coal was being supplied to the furnaces at a greater rate than was required to maintain the steam pressure, and charges were reduced first to 265 pounds each, and finally to 260 pounds each, to avoid producing better fires at ending than was had at beginning of trial.

The coal was burned at the rate of four charges an hour, beginning at 11:15 A. M., Dec. 7th, with the first charge to No. 2 furnace, the second charge at 11:30 A. M. to No. 3 furnace, the third charge at 11:45 A. M. to No. 4 furnace, and the fourth charge at 12:00 M. to No. 1 furnace, and so on for entire trial.

There was consumed in ten hours forty charges of coal as follows:

31 charges of 275 pounds 2 charges of,265 pounds 7 charges of 260 pounds	8,525 530 1,820
Total coal	10,875
Less accumulations of coal from the several charges during trial weighed	
back at 9:15 P. M	503
Net coal burned	10,372

The fires were carefully cleaned at 11:00 A. M. and at 9:00 P. M., and ash and clinker returned at end of trial 1070 pounds, or

1070 10372 × 100-10.3162

per cent. of original weight of coal shown as non-combustible.

The water to boilers was weighed in net charges of nominally 1900 pounds to each in a cask mounted on a large platform scale, and drawn into a supplemental tank connected with the feed pumps.

In addition to the water thus weighed to boilers, there was a quantity of condensation represented by the drainage from the jackets of "A" engine, which was trapped directly to the feed pumps and could not be measured.

During the test for boiler efficiency (as already mentioned) the drainage from jackets of "B" engine was caught and weighed for entire time, and upon the assumption that the steam expended in maintaining the jackets of "A" engine was equal to the drainage caught and weighed from jackets of "B" engine, then the quantity of water weighed in the weighing cask added to the drainage from jackets of engine "B" represented the total delivery of water to the boilers.

There was weighed and delivered to boilers 48 charges of water, as follows:

34	charges	of	1900 pounds	64.600
3	charges	of	1905 pounds	5.715
2	charges	of	1903 pounds	3,806
I	charge	of	1955 pounds.	
I	charge	of	1916 pounds.	
I	charge	of	1936 pounds.	
I	charge	of	1902 pounds.	
I	charge	of	1908 pounds.	
1	charge	of	1940 pounds.	
1	charge	of	1964 pounds.	
1	charge	of	1909 pounds.	
I	charge	of	1130 pounds.	_
			<u> </u>	16,559
			Total water from weighing cask	90,680

From 11:15 A. M. to 9:15 P. M., Dec. 7th, there was caught and weighed from jackets of "B" engine 5271 pounds of condensation, and total water to boilers:

From weighing tank	90,68 0.
From jackets "A"	5,271.
Total water, pounds	95,951.
Less waste from relief valve on feed pipe, which was caught in casks and	
measured, pounds	1,262.8
Net water to boilers	94,688.2

And apparent evaporation per pound of coal,

94688.2 10372 — 9.1292 pounds

From 39 calorimeter observations the following averages are obtained:

Weight of water heated, pounds	200.
Weight of steam condensed, pounds	10.705
Initial temperature, as read	44.051
Initial temperature, as corrected	44.0513
Final temperature, as read	101.512
Final temperature, as corrected	101.6338
Elevation of heat of water by condensation of steam heat, units	57.5828
Thermal value of the steam, per pound	1177.4454
Thermal value of the steam at observed pressure, 83.0	1213.33
Difference	35.8846
Latent heat of steam at observed pressure	883.8
Percentage of water entrained in the steam	4.06
Efficiency of the steam	0.9704

From the calorimeter data the net steam per pound of coal from temperature of feed water to boilers is deduced as

The mean of 41 readings for temperature of feed water to boilers is 147.45, and corrected temperatures:

$$[(147.45-39.1)^2 \times 0.00000309] + 1 \times 147.45 = 147.985;$$

and heat derived from the fuel burned under the boilers, per pound of steam,

1213.22-147.985-1065.346 thermal units;

and steam per pound of coal, from and at 212 Fahr.:

and steam per pound of combustible from and at 212:

The general conditions under which the boilers worked were as follows:

Steam pressure, mean of 21 readings:	
No. 2 boiler	82,875 pounds.
No. 3 boiler	83,775 pounds.
No. 4 boiler	82,350 pounds.
Average	83,002 pounds.
Temperature of feed water	147.45
Temperature of air, boiler-room	73.80
Water levels at 11:15 A. M., Dec. 7th:	
No. 2 boiler	5.25 inches.
No. 3 boiler	4.25 inches.
No. 4 boiler	4.50 inches.
Total	14.00 inches.
Water levels at 9:15 P. M. Dec. 7th:	
Boiler—No. 2	4.75 inches.
No. 3	5.25 inches.
No. 4	4.75 inches.
Total	

Excess of water in boilers at end of trial, in relation to total water charged, about one-third of one per cent.

The water in the boilers at end of trial in excess of the levels at commencement has not been deducted from the water charged to boilers, owing to its small effect upon the calculated results.

The mean temperature of the water from the weighing cask to the feed pumps was, for whole trial, 81.383 Fahr.

Elevation of temperature of feed water, by drainage from steam jackets, and steam in feed water heater, 66.067 deg. Fahr.

Each side of the engine was furnished with a small tubular feed water heater, through the tubes of which the condensation and steam from the jackets passed before reaching the steam traps.

Through the barrels of the heaters the feed water was pumped to the boilers.

The jacket steam is taken from the bottom of an intercepting receiver 20" diam.×48" high, placed in the main steam pipe near the engine. This is a cylindrical vessel of cast iron, with flanged nozzles on the opposite sides to connect with corresponding flanges on main steam pipe.

These nozzles are placed out of line with the nozzle next to engine nearest the top of receiver, to prevent the steam from carrying water of condensation or primage over into the cylinders of engine.

By means of the receiver, all water of condensation or primage is intercepted before it reaches the engine, and is drawn through the jackets into the feed water heater, and finally trapped to the feed pumps, from which it is delivered back again to the boilers.

The water caught and weighed from the jackets of "B" engine during trial of Dec. 7th amounted in ten hours to 5271 pounds; assuming the consumption of steam in the jackets of "A" engine to have equaled the consumption in "B" jackets, then total consumption by jackets was 10,542 pounds.

During the same time the total steam delivered to engine was 94686.2 pounds, showing an expenditure of

$$\frac{.10542}{.94688.2}$$
 = 0.1113

of total steam in the jackets.

This large consumption of steam is accounted for in the following manner:

The intercepting receiver in the steam pipe, the steam jackets and the feed water heaters are all connected through the steam traps with the feed pumps, and through the pumps and feed pipe with the boilers, so that no loss in economy could occur by reason of an excessive flow of steam through the jackets, all heat beyond that required to properly maintain the jackets being utilized in heating the feed water in the heater, or upon mingling with the feed pumped from the hot wells into the feed pipe.

The construction of the jacket drainage and feed water apparatus is such that a loss by a large flow of steam through the jackets is balanced by a corresponding increase in the temperature of feed water to boilers, less any losses by conduction and radiation through connecting pipes, which, with the excellent methods of protection employed in this instance, must be very trifling, and perhaps considerably less than the loss in economy which might occur with an inadequate supply of steam to the jackets.

The average temperature of drainage from jackets of "B" engine was 197.5 degrees Fahr.

During the trial for economy of boilers, sufficient data was taken in the engine-room from which to estimate the duty for the same time, as follows:

Engine counter read at intervals of 15 minutes.

Engine counter 11:15 A. M. Dec. 7th	. 494. 740.
Engine counter 9:15 P. M. Dec. 7th	503.619.
Revolutions in 10 hours	8.779.
Head pumped against, by pressure gauge, mean of 41 readings, lbs.	79-375
Difference center water pressure gauge and surface of water in pump-	
well { feet	25.25
	10.980
Allowance for frictional resistance, pounds	1.000
Total head, pounds	91.855
The average steam pressure in pipe was, pounds	80.412
The actual coal burned was, pounds	10,372.
and duty:	
895.121×3.9831×4×91.355×8779	•

10.372

foot pounds.

The quality of coal burned during all the trials was not of the best, as shown by the large percentage of ash and clinker weighed back at end of capacity trial, at end of duty trial and for ten hours of test of boilers.

During the first 24 hours there was burned 27,225 pounds of coal and weighed back, 2,691 pounds of non-combustible.

During the 49 hours of duty trial there was burned 52,908 pounds of coal and weighed back 5,485 pounds of non-combustible.

During the test of boilers there was burned 10,372 pounds of coal and weighed back 1,070 pounds of non-combustible.

From which we derive as the percentage of non-combustible for a period of 73 hours, with a consumption of 80,133 pounds of coal:

 $100 \times \frac{8176}{80,133}$ —10.203 per cent. of non-combustible.

For the boiler test the percentage of non-combustible is given as 10.316 per cent, and from the daily experience with this coal at the pump-house, under ordinary conditions of use, the non-combustible is stated by the engineer in charge—who weighs all the coal to the furnaces and all ash and refuse from the fires and ash-pits—to be approximately 10 per cent. of the original weights of coal.

I have appended a series of indicator diagrams from all steam cylinders and pumps taken for different times during the duty trial to illustrate the action of the engine.

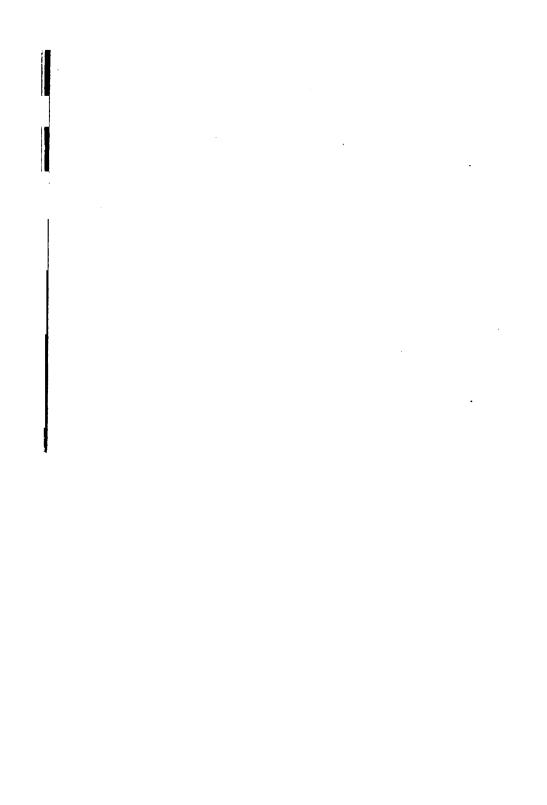
The H. P. diagrams were taken with 40 springs, the L. P. diagrams with 10 springs, and the pump diagrams with 40 springs.

In conclusion, I desire to thank the Water Commissioners and the Superintendent of Water Works, Mr. Knapp, for the excellent facilities furnished me for these trials.

Very obediently yours,

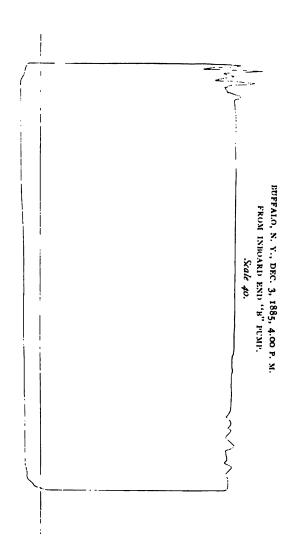
JOHN W. HILL.

CINCINNATI, Dec. 24th, 1885.









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Eighteenth Annual Report

Juffalo City Water Works

1886.

& BUFFALO PUB. LIB'Y



EIGHTEENTH

ANNUAL REPORT

OF THE

BUFFALO CITY WATER WORKS

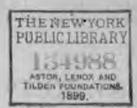
BUFFALO, NEW YORK,

FOR

THE YEAR 1886.

BUFFALO:
Times Printing House, 191 Main Street.
JNO. LAUGHLIN & CO.

1887.



OFFICERS--1886.

Board of Water Commissioners.

LOUIS P. REICHERT, Chairman.

JAMES RYAN, Secretary.

S. K. WORTHINGTON.

Superintendent.

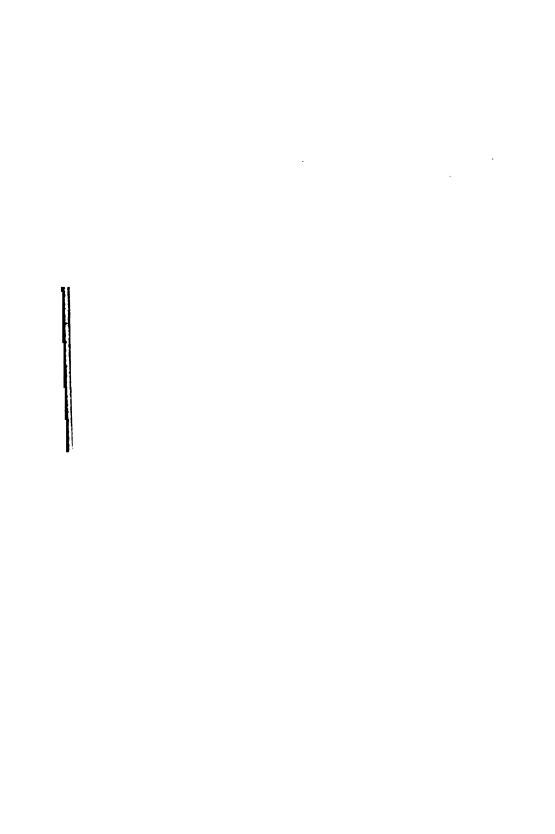
LOUIS H. KNAPP.

Office.

JOHN T. REES, Registrar.
G. C. GRIMARD, Cashier.
JOHN SCANLON, Clerk.
CHAS. H. BIEBER, "
A. HOESTERMANN, "
EDWARD J. BRADY, "
FRANCIS S. SMITH, "
JAMES H. LEE, "

Chief Engineer.

PATRICK BRENNAN.



Commissioners' Report.

To the Honorable Common Council of the City of Buffalo:

GENTLEMEN—In compliance with title fifteen, section number ten of the City Charter, we have the honor to herewith submit to you our Eighteenth Annual Report of the Buffalo City Water Works:

During the month of February, steps were taken to perfect the Charter of the city pertaining to the Water Department. On February 15th, we communicated with your Honorable Body, setting forth the defects of the present Charter. The subject matter receiving prompt attention by your Honorable Body, and through your hearty co-operation, an amendment was prepared and forwarded to our representatives in Albany, which was passed by the Legislature. The Charter as now is a great improvement, and will enable the Department to so conduct the affairs as will be for the best interests of the Department and its water consumers.

The means taken to prevent the closing of our Inlet Pier with ice has proven a success.

The Works, through all its departments, are in good repair.

The total expenditures of the Department for the year, apart from making provision for payment of bonds falling due, were:

erest on Bonds	\$176,366	74
ntenance and repairs	95,031	04
Improvements and extensions	258,955	17
Payment of new Gaskill engine, boilers and trial tests	83,538	40

There was added to the year's estimate by your Honorable Body, \$76,700 to lay mains in the following streets to be paved with asphalt, or where the revenue to be derived did not warrant the expenditure from the Department's revenue:

Bouck avenue.

East street.

Eagle street.

Parish Tract Extensions.

Jefferson street.

Broadway.

All the work was done, the cost of which was kept under the amount appropriated.

REVENUE.

The total amount received by the Department for year		
ending December 31, 1886, was	\$477,209	57
Increase over previous year	32,784	87

While the revenue is yearly increased about \$20,000 by the collection of frontage, and is the means of assessing consumers of water from the various free hydrants throughout the city, it is, at the same time, a source of petty annoyance to the Department and consumers, which we would seek to avoid, and

believing the main object sought to be obtained by its enforcement has been accomplished, we are of the opinion that the same can be dispensed with for the time being, and do so recommend to your Honorable Body.

WATER DEBT.

The funded debt of the Water Department was reduced \$50,000 during the year. Of the 7 per cent. bonds that fell due on October 1st, one hundred thousand dollars were refunded at a lower rate of interest, 3½ per cent., and sold at a premium of \$3,760.

There will become due during the year \$150,000 of 7 per cent. bonds. We would recommend that they be refunded at a lower rate of interest.

WATER MAINS.

There was laid during the year 22 miles, 2,768 feet of water pipe of various sizes, as follows:

4-inch		
10-inch	6,834	feet.
12-inch	9, 126	feet.
16-inch	17,300	feet.
20-inch	4,906	feet.
24-inch	2,011	feet.
36-inch	336	feet.

This gives a total of 213 miles, 1,218 feet in the city on January 1, 1887.

Wi rease of mileage of pipe in the city, and the consumption of water by new consumers on new and o e of mains, the total pumpage for the year was two e billion gallons of water, being a daily average of three million gallons.

e demand on the Department for extension of mains has nprecedented. The closing of the public wells by order the rapid settlement in the out is of the country the laying of pipe a yearly requirement.

ALTERATIONS AT L

PING STATION.

There was expended \$4, o in making repairs to Worthington Engine No. 1. She was thoroughly overhauled, and is now practically as good as new.

A new boiler-house was erected at the south end of present buildings at an expense of \$3,744.06.

All the low service Marine boilers were removed from the coal-house and placed in the new Boiler-House.

The placing of these boilers in a separate building, as provided, renders accidents to engines less liable in case of boiler explosion.

The Station and grounds are now illuminated by electricity, through a plant purchased from the United States Electric Light Company, at a cost of \$2,500. This will be a large saving in expense for lighting over the old method.

EXTRA HIGH SERVICE

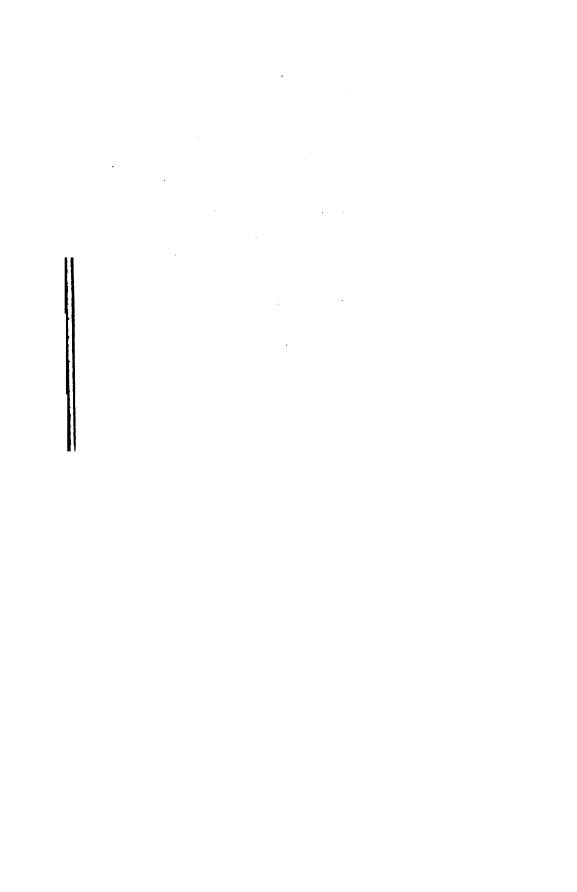
The supply to the northerly part of the city has been strengthened and improved, by completing a line of 16-inch main from the Upper Pumping House through Front avenue and Jersey street, to connect with the 12-inch in North street, the Holly engines being used to supply this territory. This takes some twelve miles of mains from the service as established, thereby improving the same as well.

For a detailed statement of the condition of the Works, the finances, construction, maintenance, etc., we refer you to the reports herewith of the officers of the respective departments.

Respectfully submitted,

L. P. REICHERT,
JAMES RYAN,
S. K. WORTHINGTON,

Water Commissioners.



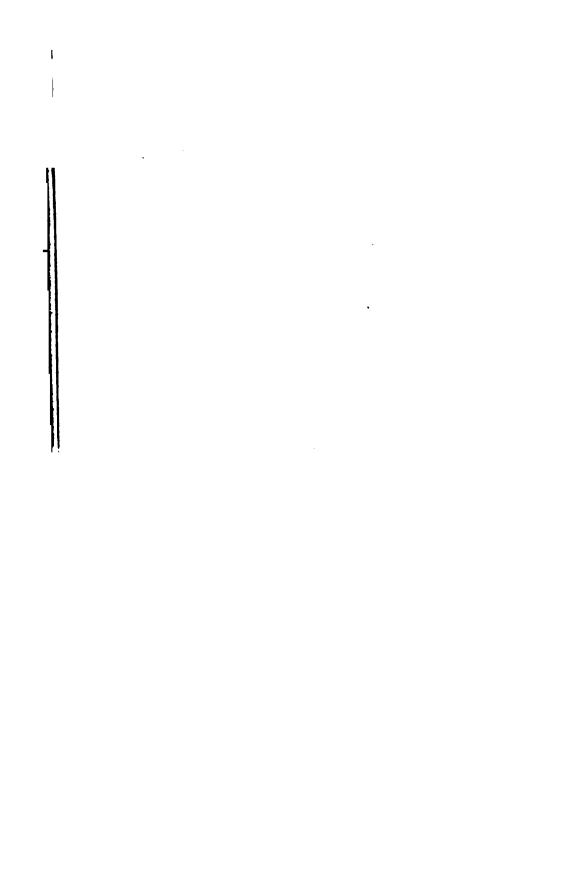
REPORT

OF THE

SUPERINTENDENT

FOR

1886.



BUFFALO CITY WATER WORKS.

SUPERINTENDENT'S OFFICE.

Buffalo, January 1, 1887.

To Louis P. Reichert, James Ryan and S. K. Worthington, Water Commissioners:

GENTLEMEN — Herewith is presented a report showing the operations of the Department, and the detailed statement of the same for the year 1886:

LOWER PUMPING STATION.

Worthington Engine No. 1 has been thoroughly repaired, and new foundations placed under it. This engine has run continually since it was first started, December 12, 1872, and the repairs made upon it were but slight from year to year. The original foundations were imperfectly constructed, and most of the outlay this year was owing to this defect. The Marine boilers have been moved into the new South Boiler-House, constructed during the year, and all of them (5) thoroughly repaired. An electric light plant was also purchased, and is now used for lighting both stations and grounds.

UPPER PUMPING STATION.

The change suggested in the last report was made, and the engines are now supplying that part of the city above the contour line of 80.

DISTRIBUTION.

There was laid 22 miles and 2,768 feet of pipe of various sizes, at a cost of \$191,563.08, making the total amount of pipe 213 miles and 1,218 feet.

A large proportion of this is 6-inch pipe. In the matter of pipes for fire protection, it is all-important that there should be a liberal supply of water. When it is wanted for fire purposes, there cannot be too much of it. In the future, it would be advisable to lay more 8-inch and less of 6-inch pipe.

In the extension of mains, with but few exceptions where the streets are paved, the Department should see that the water pipe is laid in advance of the pavement. The city is better prepared now to lay one line of pipe than it will be in two or three years to lay two lines, one on each side of the street.

There was placed in the mains 3,703 additional taps, making the total number 26,438.

HYDRANTS.

There were 180 hydrants placed on new pipes, making the total number in use for fire purposes 1,963. Wherever practicable, they are provided with a 4-inch vitrified tile drain. The

twelve experimental hydrants mentioned in the last report effectually prevent them from freezing. The care and maintenance of hydrants during the severe winter weather, to insure them from being frozen, is the same as last winter. The dividing of the city into five districts, each in charge of a foreman and six men, and then careful and frequent inspection, is the only safeguard against frozen and disabled hydrants.

VALVES.

There were placed 327 valves in the new mains.

METERS.

There are 97 meters on large supply, and 29 hydraulic elevators. The amount of water registered by them was 1,459,522,832 gallons, the amount received for it being \$46,412.01. The expense of maintenance was \$1,182.91.

CONSUMPTION.

The average daily consumption was 33,068,172, being 147 gallons per head of population.

INLET PIER AND TUNNEL.

The shaft at the Inlet Pier from the bottom of the river to the top of the tunnel should be made the full size of the shaft through the masonry, namely six feet in diameter. The iron gate on the American side should be removed, and the house and iron-work painted. The two bulkheads in the tunnel should be removed and all material removed from the bottom

EIGHTEENTH ANNUAL REPORT.

aft, two iron gates and frames in the shore shaft, e extension to the pump wells. When this work is new tunnel will be increased to more than double its ity.

ENGINES.

In March last, I recommended the purchase of an additional engine for the high service five million gallons, and leaving nothing in reserve as soon as they can l the high service and one fo boilers, chimneys, well-gates a new pumping main f

r total daily capacity is fiftyed over fifty-four million, r accidents. We require, auditional engines, one for rvice, with the necessary ow and pipe for the same, and house to the city.

To supply the district east of Jefferson street, a reservoir on the Dodge Farm is an absolute necessity, and needs your serious consideration. When commenced, it will take three years to complete the same.

LOUIS H. KNAPP,

Superintendent.

REPORT

OF THE

REGISTRAR

FOR

1886.

.

REGISTRAR'S OFFICE.

Buffalo, January 1, 1887.

Louis P. Reichert, James Ryan, S. K. Worthington, Water Commissioners:

GENTLEMEN—In compliance with the requirements of your Honorable Body, I have the honor to herewith submit my report for the year ending December 31, 1886.

The total receipts and disbursements of the department for the year were as follows:

RECEIPTS.

Cash on hand January 1, 1886,		.	\$83,525.24
Cash receipts for year Frontage tax	\$105.008.82	\$372,772.04	
Addition to frontage tax	-		
Less amount returned by Coun-	106,310.19		
cil	1,872.66	104,437.53	
Appropriated from the Genera	1 Fund to do	special work	477,209.57
ordered by Council		•	•
			\$637,434.81

DISBURSEMENTS,		
Interest on Water Bonds	\$176,366.74	
Maintenance and Repairs	95,031.04	
mprovements and Extensions	258,955.17	
askill Engine and Testing.	83,538.40	
cash, balance on hand January 1, 1887	23,543.46	\$637,434.81
REVENUE.		
The said and the said at	. many vilve	A 100 10000
The total revenue of the department for the		
This is an increase over the previous year	01	32,784.87
The following itemized statement sl	nows source	of revenue,
viz.:		
Water, for City purposes		\$100,000.00
From Domestic Consumers and Manut'rs n		
" Flushing Sewers	*********	185.56
" Street Sprinkling		
" Circuses		31.00
" New Boxes	· · · · · · · · · · · · · · · · · · ·	122.75
" Corporation Cocks	•••	7,231.00
" Turn-on Fees		147.00
" Rent of Dodge Farm		655.00
" Builders		1,497.36
" Street Paving		431.90
" Manufacturers and Railroads, meter	ed	46,412.01

FROM SALE OF OLD MATERIAL.

Jan. 15, M. Lichtenstein lead skimmings\$	4.65
" 22, Howard Iron W'ks, old valve	5.00
Feb. 29, A. S. Hettermanure	6.00
Mar. 16, M. Lichtenstein1,952 lbs. scrap	5.98
April 6, Bingham & Taylor, 300,825 lbs. scrap	
gross	1,520.30

April 9, M. Lichtenstein5,020 lbs. scrap	\$ 28.10	
" 19, W. C. McDonaldold wagon	20.00	
May 6, John Fisher 125 lbs. of old pipe	.75	
" 19, Thomas Darkhydrant cap	.35	
" 26, M. Lichtenstein880 lbs. lead skim-	00	
mings	13.20	
July 9, M. Lichtenstein3732 lbs. lead skim-		
mings and scrap	36.05	
Aug. 17, Joseph Irr136 lbs. 12-in. scrap		
pipe	2.75	
" 30, M. Lichtenstein1,718 lbs. skimmings	25.77	
Sep. 14, A. S. Hetter manure	6.50	
Oct. 5, M. Lichtenstein2, 140 lbs. scrap	24.96	
" 16, Bingham & Taylor, 90,090 lbs. scrap	577.78	
Aug. 7, Fries & Co714 lbs. scrap brass	64.26	
Nov. 3, M. Lichtensteinscrap rope and old		
barrels	112.04	
" 11, M. Lichtenstein4254 lbs. scrap and		
skimmings	85.46	
Dec. 8, John Doe28 lbs. scrap brass	.75	
" 22, Shepard Hardware		
Cospecial casting	3.00	
" 26, Bingham & Taylor, 37,880 lbs. cast scrap	•	
-		\$ 2,904.59
		,

LABOR AND SUPPLIES.

Jan. 15, S. S. Jewett & Co., labor and material\$	33.65
" 18, T. McQuadelabor and material	18.61
Feb. 5, C. Klincklabor, setting 4-inch	
meter	52.34
Mar. 13, D., L. & W. R. R. Co. labor, setting 6-inch	
meter	63.29
April 2, R. Ovensmaking connection	3.36
" 3, Holly M'f'g Colaying 12-inch dis-	
charge pipe	80.21

April 9, George Hughsonlabor, setting meter	\$ 2.47
" 15, D. W. McConnell labor and material	1.70
" 15, D. W. McConnell. rep'rs to broken pipe	8.94
" 19, R. W. Bellmaking connection	46.15
" 24, N.Y.C.&H. R. R'd. repairing leak	10.50
" 29, C. Weaver repairs to hydrant,	
(damage)	5.00
" 30, John D. Smith 11/2 - inch Union	
meter, etc.	30.50
May 8, R. L. Howard labor, Trinity Church	38,97
" 8, Harry Hamlinrepairs, leak	29.00
" 28, L. H. Knapp18 hours' labor	2.70
June 7, Plumb, Burdict &	
Barnardrepairs Crown meter	6.85
" 16, Wesp, Lautz Bros.&	
Co cutting off supply	23.50
11 19, J. A. Roberts making connection	120.00
11 22, Rink, Seneca, cor.	
,,,,	
S. Cedarsetting meter, etc	15.00
	15.00
S. Cedarsetting meter, etc "26, A. P. Wrightrepairs to meter register	1 5.00
S. Cedarsetting meter, etc " 26, A. P. Wright repairs to meter register gister July 6, James Ryan labor and material	•
S. Cedarsetting meter, etc " 26, A. P. Wright repairs to meter register July 6, James Ryan labor and material " 22, Union Steamb't Co. setting hydrant	5.55
S. Cedarsetting meter, etc " 26, A. P. Wrightrepairs to meter register July 6, James Ryanlabor and material	5·55 12.50
S. Cedarsetting meter, etc '' 26, A. P. Wrightrepairs to meter register July 6, James Ryanlabor and material '' 22, Union Steamb't Co. setting hydrant '' 28, Park Commiss'ners. setting hydrant '' 30, C. Richardson	5·55 12.50 77·14
S. Cedarsetting meter, etc '' 26, A. P. Wrightrepairs to meter register July 6, James Ryanlabor and material '' 22, Union Steamb't Co. setting hydrant '' 28, Park Commiss'ners. setting hydrant '' 30, C. Richardson	5·55 12.50 77·14 40.95
S. Cedarsetting meter, etc " 26, A. P. Wrightrepairs to meter register July 6, James Ryan labor and material " 22, Union Steamb't Co. setting hydrant " 28, Park Commiss'ners setting hydrant " 30, C. Richardson 1½ days' labor " 31, W. Russellmaking connection Aug. 3, Pratt & Comaterial, etc	5·55 12.50 77·14 40.95 2.03
S. Cedarsetting meter, etc " 26, A. P. Wrightrepairs to meter register July 6, James Ryan labor and material. " 22, Union Steamb't Co. setting hydrant " 28, Park Commiss'ners setting hydrant " 30, C. Richardson 1½ days' labor " 31, W. Russellmaking connection Aug. 3, Pratt & Comaterial, etc " 7, Park Commiss'ners repairs, etc	5.55 12.50 77.14 40.95 2.03
S. Cedarsetting meter, etc	5·55 12·50 77·14 40·95 2·03 120.00 16.06
S. Cedarsetting meter, etc "26, A. P. Wrightrepairs to meter register July 6, James Ryanlabor and material "22, Union Steamb't Co. setting hydrant "28, Park Commiss'ners setting hydrant "30, C. Richardson	5·55 12·50 77·14 40·95 2·03 120.00 16.06
S. Cedarsetting meter, etc "26, A. P. Wrightrepairs to meter register July 6, James Ryanlabor and material "22, Union Steamb't Co. setting hydrant "38, Park Commiss'ners. setting hydrant "30, C. Richardson	5·55 12·50 77·14 40·95 2·03 120·00 16·06 47·15
S. Cedarsetting meter, etc " 26, A. P. Wrightrepairs to meter register July 6, James Ryanlabor and material " 22, Union Steamb't Co. setting hydrant " 28, Park Commiss'ners setting hydrant " 30, C. Richardson	5.55 12.50 77.14 40.95 2.03 120.00 16.06 47.15 27.00
S. Cedarsetting meter, etc " 26, A. P. Wrightrepairs to meter register July 6, James Ryanlabor and material " 22, Union Steamb't Co. setting hydrant " 28, Park Commiss'ners. setting hydrant " 30, C. Richardson	5.55 12.50 77.14 40.95 2.03 120.00 16.06 47.15 27.00 86.20 6.00
S. Cedarsetting meter, etc " 26, A. P. Wrightrepairs to meter register July 6, James Ryanlabor and material " 22, Union Steamb't Co. setting hydrant " 28, Park Commiss'ners. setting hydrant " 30, C. Richardson	5.55 12.50 77.14 40.95 2.03 120.00 16.06 47.15 27.00 86.20 6.00 46.25
S. Cedarsetting meter, etc " 26, A. P. Wrightrepairs to meter register July 6, James Ryanlabor and material " 22, Union Steamb't Co. setting hydrant " 28, Park Commiss'ners. setting hydrant " 30, C. Richardson	5.55 12.50 77.14 40.95 2.03 120.00 16.06 47.15 27.00 86.20 6.00

Oct. 2, L. H. Knappsundry labor	\$ 3.60	
" 9, J. Dolanrepairs, leak	3.00	
" 25, Lehigh V.R.R.Colaying service pipe	396.14	
Nov. 8, L.Sh. Elev. Depos. laying pipe		
Dec. 14, Park Commiss'ners repairs to valve		
" 18, Buffalo School Fur-	•	
niture Colabor and material	40.84	
" 21, Danforth & Clark labor and material	32.46	
" 18, Hingston & Wood.making connection	42.18	
" 24, Howard IronW'rks. putting in branch		
" 24, Howard IronW'rks.putting in branch		
" 27, Atlas Refining Co. setting 6-inch Crown	•	
meter	98.56	
" 28, James Ryansundry labor	19.93	
" 30, George Martinrepairs to leak		
" 31, D. McConnell repairs to pipe	1.75	
" 31, John H. Knepper labor at Chippewa		
market	19.85	
	-	\$ 2,415.59
*Frontage tax		104,437.53
		\$477,209.57

^{*} The amount of frontage tax rebated to January 1, 1887, being \$65,996.16.

EIGHTEENTH ANNUAL REPORT OF

WATER BONDS.

Bonds outstar tension and impresued for the purchase, exrks.

te of Issue.	Amount	When	D.	e of 1ss	suc.	Amount.	Whe	n Due.
1, 1870			-	1, 1		\$100 000		1, 190
1, 1870		-		1, I		79 382		
1, 1870				, I, I		100.000		
in. 1, 1871	50,000	-	1	1, 1	22/5/22 11	50 000		1, 189
g. 1, 1871	50,000		I, ass	2, 1				2, 189
I, 1871	100 000		1, 180					25, 180
april I, 1872	50,000	April	1, 188/	Apr. 26, 1				26, 1890
July 1, 1872	100,000	July	1, 1890	July I, I	880	50,000	July	1. 190.
Oct. 1, 1872	100,000	Oct.	1, 1892	Sept 'I, I	880	100,000	Sept.	1, 190
Dec. 1, 1872	J 100,000			Nov 26, 1				26 1897
	(100,000			Apr. 25, 1				25, 1900
Sept. 1, 1873				Apr. 1, 1				1, 190
April 1, 1874	100,000			July 1, 1		100,000		
July 1, 1874	100,000	July	1, 1906	Oct. 1, 1	886	100,000	Oct	1, 190
				Total		\$2,778.382		

INTEREST PAID ON WATER BONDS DURING 1886.

January 18th\$	8,750.00
February 15th	13,750.00
March 22d	34,153.37
April 19th	1,280.00
May 24th	10,500.00
June 21st	19,750.00
July 19th	22,500.00
September 20th	34,153.37
October 18th	1,280.00
November 22d	10,500.00
December 20th	19,750,00
-	

\$176,366.74

COST OF WATER WORKS FROM PURCHASE TO DATE.

Original Purchase	\$ 705,000 00
Dodge Farm	100,726.14
Extensions and Improvements	3,795,102.57
Interest on Bonds	2,987,110.97
Maintenance and Repairs	
On hand January 1, 1887	
Total	\$9,027,396.83

RECEIPTS.

Water Rates	\$4,360,408.96
Bonds Taxes	<i>3,</i> .0
Total	\$9,027,396.83

PRESENT STANDING OF WATER WORKS ACCOUNT.

			-
	Jan. 1, 1886.	Added during the year.	Jan. 1, 1887.
Original Purchase	\$ 705,000.00		\$705 000.00
Real Estate, including Taxes	100,726.14		100,726.14
Engines	234.456.69	\$ 6 541.89	240,998.58
Holly Pumping House	12,002.25		12 002.25
Holly Pumping Machinery			
New Engine House	82 610.32		82 610.32
Gas Well	9 4 6 . 44		9,406.44
Inlet Tunnel and Pier	530,346.56		530 346.56
Main Pipes, Branches, Hydrants, etc.	2 488,442.23		
Coal and Boiler House and Chimney			26,711.53
Gaskill Engine	11 354.04		
Coal Tunnel connecting Upper and)			
Lower House	3 351.19		3 351.19
New Valve House	910.70		910.70
Overhead Crossing	1,447.87		1,447.87
New Boiler House			
Electric Light Plant		3,744.06	
		2 734.76	
Repairs, Boilers and moving same	'	2.922.20	2,922.20
Total	\$ 4 245 ,855.96	\$342,493.57	\$4,588,349.53
-	Ψ4 =45,033.90	*34*1493 ·3/	W4,300,349,3

COMPARATIVE STATEMENT.

Revenue received, coal consumed and water pumped annually for sixteen years.

			Coal		Water Pumb'd		a	Pipe.	Each !	Year.
Year.	Revenue.	Expenses.	Consumed, Tons.	Water Pumped, Gallons,	Daily, Gallons,	Extensions.	Miles.	Beet	Miles	Peet
183	\$124,865.00	\$77.456 95	3,645	2 775,752 490	7,604,801		67	4 644	12	21.00
1872	138,150 00		4.546	3.226,891,140	8,840,797	192	77	2,021	6	3.557
1873	168 267.20		720	3.329,193.162	9.316,598	308,600 46	81	4,912	4	1,991
1874	176,219.10		2852 50	3,040,012,107	S,509,48r	355.	98	4.905	7	5,273
1875	184.516 48		3.122.67	3,828,594,027	10,489,298	159,098.75	16	1,591	7	1.966
1876	101 335,84		3 357.88	4.020,936,278	11,016,263	106,900.21		4.931	1	3,340
1877	189,296.90		3.249	4.267,218,162	181,190,11	17,014.05		2,631	***	2,950
1878	200 183.28		3.524 50	4,589,879,986	12,503,078	48,555.32		3 376	1	745
1879	205 415 75		3.979.75	5 291,337.520	14,496,815	11 457.50		626	ci	2,530
188o	216,214 37		5.809	5,993,009,343	16,369,802	161,883.89	102	873	10	247
1881	210,031.46		192.80		394,	201,487.10		4.149	122	3.276
1882	362 762.07		*****	7,076,212,870		160,617.81		524	16	1,655
1883	426,353.57		8 811	8,568,435,200	23.475,192	200,020.90		529	18	5,135
1884	381,581.64		9.128	8,789,971,200		186,623.92		2,031	14	2,402
1885	444 440 77		10 503	10.441,393.340	28,606,557	327.918.82	161	830	27	1,474
1886	477 209 57		280	12,069 582,676	33,468,172	342,403.57	213	1,218	17	388

BALANCE SHEET, BUFFALO CITY WATER WORKS, DEC. 31, 1886.

2.	Buffalo City Water Works Con-	• • •	
.3.	struction	\$ 584,382.00	
	sion Fund	734,692.34	
4.	Bonds Payable		\$2,828,382.00
5.	City Treasurer	83,525.24	
6.	Hydrant and Water Fund		961,717.58
7.	Buffalo City Water Works Exten-		
	sion Loan	2,387,500.00	
16.	Supply Account		437,524.61
35⋅	Store House	3,854.50	
60.	Pipe and Specials	•	4,339.83
8 o .	Lead		2,149.05
102.	General Street Repairs	6,856.26	
117.	Labor Trench Account	4,987.78	
124.	Meter Repairs	1, 182.91	
129.	Valve Repairs	1,941.54	
139.	Hydrant Repairs	12,287.58	
152.	Service Leaks	338.83	
157.	Joint Leaks	1,992.91	
160.	Repairs, Free Hydrants, etc	810.11	
162.	Salaries	12,217.93	
163.	Inspectors	7,913.00	
164.	Tapping	2,051.38	
165.	Hostler	1,156.38	
166.	Watchman	763.50	
167.	Teamster	1,020 84	
168.	Engineers, Upper Engine House	783.32	
169.	Firemen, Upper Engine House	960.35	
170.	Labor, Upper Engine House	775-75	
171.	Engineers, Lower Engine House	5,374.83	
172.	Firemen, Lower Engine House	7,019.90	
173.	Labor, Lower Engine House	7,889.14	
174.	Reservoir	960.28	

175.	Pipe Inspector	\$ 468.75
176.	New Maps	1,853.94
178.	Louis P. Reichert	1,011.33
179.	James Ryan	1,418,00
180.	S. K. Worthington	1,011.33
181.	Fuel	36,691.86
184.	Printing, Office Expenses and	
	Stationery	2,569.17
186.	Advertising	126.00
187.	Feed	893.53
189.	Horse Shoeing	28.40
190.	Stable Supplies	592.32
192.	Harness Repairs	79.05
193.	Wagon and Sleigh Repairs	438.67
195.	Veterinary	92.00
197.	Wagons and Sleighs Purchased.	490,00
198.	Horses Purchased	1,125.00
199.	Repairs, Store House Building	52.35
203.	Repairs, Lower Engine House	
	Building	994.09
206.	Repairs, Low Service Boilers,	
	Lower Engine House	2,922.20
209.	Clerk Pump House	353.00
210.	Repairs, High Service Boilers,	000
	Lower Engine House	59.76
212.	Repairs, Engine No. 1, Upper	37.
	Engine House	10.45
215.	Repairs, Engine No. 2, Upper	.3
3	Engine House	2,307.41
217.	Supplies, Upper Engine House	302.09
221.	Repairs, Over - head Bridge,	3 /
	Lower Engine House	24.29
222.	Repairs, Boilers, Upper Engine	. ,
	House	44.23
223.	General Repairs, Machinery Up-	3
3.	per Engine House	110.75.
		1 3

225.	Repairs, Engine No. 1, Lower		
	Engine House	\$ 4,288.80	
227.	Repairs, Engine No. 2, Lower		
	Engine House	21.11	
229.	Repairs, Engine No. 3, Lower		_
	Engine House	232.53	
231.	Repairs, Engine No. 4, Lower		
	Engine House	326.41	
233.	General Repairs, Machinery		
6	Lower Engine House	2,134.93	
236.	Supplies, Lower Engine House	2,239.68	
240.	New Tools, Lower Engine House Repairs, Tools, Lower Engine	14.01	
241.	House	27.50	
	New Tools, Store House	21.50	
250. 255.	Corporation Cocks and Services	1,083.15 1,811.68	
² 55· ² 57·	Repairs, Tools, Store House	1,811.08	
257· 261.	Blacksmith Shop	1,215.25	
264.	Inlet Pier	663.24	
204. 276.	City Treasurer	= •	
270. 281.	Water Rates	372,772.04	309, 169. 33
285.	Meter Rates		46,412.01
289.	Building Rates		1,497.36
292.	Corporation Cocks		7,231.00
296.	Labor and Supplies		2,415.59
299.	Sale of Old Material		2,904.59
302.	Rent of Dodge Farm		655.00
304.	Street Sprinkling		1,568.95
305.	Turn-on Fees		147.00
307.	Flushing Sewers		185.56
308.	New Boxes		122.75
309.	Circus Rates		31.00
310.	Street Paving		431.90
401.	Freight and Express Charges	67.86	
401.	Rent of Bell Telephone	286.00	
402.	Repairs to Dodge Farm	33.00	

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402.	New Gaskill Engine	\$ 83,011.65
403.	Testing New Gaskill Engine	526.75
403.	Bridge Repairs	88.21
404.	Bird Island Pier	6.00
404.	Traveling Expenses	83.05
405.	Force Pump, Poor House	181.00
405.	New Feed Pumps	175.00
406.	Old Repair Account	30.00
406.	Repairs, Feed Pumps, Lower	
	Engine House	148.74
407.	River Buoy, Dumping Ground	195.00
407.	New Boiler House	3,744.06
408.	Repaving, 1885	4,499.24
408.	Thirty-six-Inch Force Main	100.30
409.	Electric Light Plant	2,734.76
410.	Surveying Tools	319.00
410.	Accident Account	404.50
411.	Smith Street Sewer	1,200.00
411.	Gas Bills	1,162.35
521.	Bouck avenue, West avenue to	
	Bidwell place	19,245.44
521.	Herkimer street, Ferry to Bouck	
	avenue	22,063.09
553·	Tennessee street, south to Erie Ry.	431.26
553.	Fitzgerald street, end of pipe to	
	Sandusky	490.30
554.	Mississippi street, end of pipe to	
	Scott	180.68
554.	Howard street, end of pipe to	
	Stetson	83.03
554.	Illinois street, Scott to Perry	436.46
555.	Burwell place, Scott to Perry	351.78
555∙	Smith street, Clinton to Bristol	322.41
555∙	Reed street, Sycamore southerly.	1,334.70
556.	Grant street, Ferry to Herkimer.	379.23
556.	North street, Rose to Grape	204.80

521.	Herkimer street, Bouck to Clin-	
•	ton avenue	\$ 9,496.13
523.	Genesee street, Michigan to Oak	1,446.38
523.	Elm street, Clinton to Genesee	4,952.93
523.	Huron street, Niagara to Morgan	569.99
524.	Fifteenth street, Rhode Island to	
	Utica	380.9 9
524.	Virginia street, Seventh to Niag-	
	ara	408. 19
524.	Fillmore avenue, Peckham to.	
	Broadway	4,579.53
525.	Hodge avenue, Delaware to Ash-	
	land avenue	77.98
525.	Broadway, Smith to Parkway	199.49
526.	Main street connections	931.53
526.	Clinton avenue, Herkimer to	
	Richmond	10,643.11
526.	West avenue, Virginia to Jersey	49.07
527.	Engine House, Upper Engine	
	House Lot	3,797.57
527.	St. Paul street, Main to Oak	54.41
528.	Lewis street, end of pipe, 300 feet	
	northerly	451.93
528.	Orlando street, Seneca to L. V.	
	R. R	570.33
528.	Sycamore street, Sherman to Park-	
	way	2,244.12
529.	Virginia street, Main to Franklin	1,045.60
529.	Ellicott street, Goodrich to Best.	766.82
529.	Smith street, Howard to Oneida	466.91
530.	Lovejoy street, Fillmore Parkway	_
	to Clark	853 51
530.	Smith street, Lovejoy to Peckham	555.42
530.	Elmwood avenue, end of pipe	
	120 feet northerly	102.22
531.	Coit street, William to Howard	552.93

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531. 531.	Adams street, Clinton to Eagle North Division street, Emslie to	\$ 419.44
	Lord	888.50
532.	Townsend street, Lovejoy to William	1,470.58
532.	Oneida street, Central R. R. to	
452	Fillmore.	703.58
532.	Herman street, North to Best	566.52
533-	Maurice street, end of pipe to Elk street	949.85
533-	Ludington street, North Ogden	
	to city line	1,946.99
533-	Euclid place, end of pipe to Ab-	
	bott road	375-21
534-	De Witt street, end of pipe to	
	Bradley	289.40
534-	Glenwood avenue, Purdy to	
	Welker	484.35
534-	William street, North Ogden to	
	city line	421.30
535.	South Ogden street, William to	
	L. V. R. R	396.14
535∙	Eagle street, Raze to Fillmore	
	avenue	246.46
535.	East street, Farmer to Hertel	• •
505	avenue	1,113.63
536.	Dearborn street, Parish to Hertel	-,5
330.	avenue	2,530.38
536.	Thompson street, Amherst to	-733-13-
330.	Farmer	1,675.06
536.	Gorton street, Amherst to Hertel	1,075.00
330.	avenue	2,312.41
F 2 F	Farmer street, Gurnsey to Tona-	2,312.41
537⋅	wanda	623.71
505	Austin street, Niagara to Tona-	023./1
537.	wanda	2 010 85
	wanua	3,010.85

537-	Hamilton street, Niagara to East	\$ 457.03
538.	Troupe street, Seneca to Railroad	789.50
538.	Peabody street, Elk to Seneca	1,462.13
538.	Walter street, Perry to Seneca	824 25
539.	Fulton street, Smith to Railroad.	1,137.54
539.	Plymouth avenue, end of pipe to	
	Hampshire	370.98
539.	Pennsylvania street, end of pipe	
	to Fourteenth	569.36
540.	Northampton street, Michigan to	
	Masten	626.62
540.	East Utica street, Dupont to Hauf	355.06
540.	Thomas street, Howard to Wil-	
	liam	5 54 -97
541.	North street, Maple to Locust	478.42
541.	Detroit street, William to Lovejoy	1,348.58
541.	Brayton street, Rhode Island to	
	Massachusetts	524.89
542.	Church street, Lower Terrace to	
	Jackson	734.86
542.	Edward street, Delaware avenue	
	to Virginia	33.71
542.	Best street, Jefferson to Genesee	757-14
543-	Front avenue, Massachusetts to	
	Jersey	7,478.54
543.	Walden avenue, Genesee to Wil-	
	liamsville road	884. 76
543.	Massachusetts street	1,251.03
544	Jersey street, Front to Porter	
	avenue	4,529.31
544.	Michigan street, Bouck to Dela-	
	ware avenue	413.67
544.	Porter avenue, Jersey to Wads-	
	worth	1,101.75
545.	Coit street, Broadway to Lovejoy	743.81
545.	Main street, North to High	1,445.94

Kentucky street, South to St.

Clair

430. 18

553.

556.	Chester street; Ferry to end of	
	pipe	\$ 574.65
557.	Genesee street, Niagara to Frank-	-0- 04
	lin	380.86
557-	south	387.26
557	Jersey street, Lake View avenue	307.20
331	to Sixth	757.65
55 ⁸ .	Norton street, Lewis, 500 feet	737-5
33	easterly	502.91
558.	Maryland street, Tenth to West	
	avenue	231.96
558.	Ketcham alley, Carlton to High.	361.53
559.	Southampton street, end of pipe	
	to Jefferson	1,306.60
559.	Hoyt street, Bouck ave., southerly.	416.63
559.	Raze street, Clinton to James	288.33
560.	Hoffman alley, Hamilton street,	•
-6-	southerly Financial	223.64
560.	Sandusky street, Fitzgerald, 100	.a. 80
560.	ft. westerly Jerry street, Raze to Fillmore	125.80
500.	avenue	249.95
561.	Montgomery street, Howard to	-49.43
30	Pink	256.82
561.	James street, Montgomery to	•
	Parkway	553.56
561.	Carroll street, Hydraulic to Res-	
	ervation line	652.16
562.	Clark street, Lovejoy to Curtis	917.75
562.	Bristol street, Smith to Raze	791.87
562.	Porter street, Hydraulic to Van	
_	Rensselaer	425.42
563.	Masten street, Glenwood avenue	00
-6-	to Ferry	8 78.95
563.	Utica street, Richmond avenue to Chenango	701.82
	to Chenanko	701.02

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563.	North street, Michigan to Maple	\$ 262.52
564.	Congress street, Clinton to Dela-	
	van avenue	595-37
564	Alabama street, Perry to Scott	301.24
564.	Raze street, Clinton to Bristol	276.38
565.	Porter street, Van Rensselaer to	
	Heacock	255.90
565.	Broadway, Fillmore avenue to	
	Williamsville road	16,736.39
566.	Jefferson street "connections"	179.57
566.	Shumway street, Broadway to	10000
	Peckham	1,371.88
566.	Carlton street, "valves on High	77.00
	service"	172.40
567.	Fillmore Parkway cross connec	
	tions	1,013.12
201.	Repairs building Upper Engine	
	House	40.00
412.	Taxes	71.47
		the second secon

\$4,606,885.11 \$4,606,885.11

TRIAL BALANCE, BUFFALO CITY WATER WORKS, DECEMBER 31, 1886.

2.	Buffalo City Water Works Con- struction	\$ 584,382.00	
3.	Buffalo City Water Works Ex-	7 3 1/3	
	tension Fund	1,077,185.91	
4.	Bonds Payable	\$	62,778,382.00
5.	City Treasurer		80,894.07
6.	Hydrant and Water Fund		1,139,791.84
7.	Buffalo City Water Works Exten		
	sion Loan	2,387,500.00	
10.	Redemption Bonds, Sinking		
	Fund		50,000,00

\$4,049,067.91 \$4,049,067.91

SCHEDULE OF BILLS AND ACCOUNTS

Approved during the Year 1886 by the Water Board and Paid by the City Treasurer.

IMPROVEMENTS AND EXTENSIONS.

1886. Date.	Name. Description.	Amount,
Jan. 11.	W. C. McDonaldRemoving earth	\$ 200.00
"	Holly Mfg. Co., Lock-	
	port, N. Y Part payment on Gaskell	
	Engine	50,000.00
Jan. 25.	G. C. Grimard, Cash'rPay roll, January	
-	The National Meter Co.,	
	N. Y1-6" Crown meter, etc	629.00
Feb. 15.	N. Y., L. E. & W. R. R. Freight	3.72
"	Fries & CoCorporation cocks	16.90
"	Pratt & LetchworthCommon axles	12.32
44	Cornell Lead Co Coil med	20.68
"	Goodyear Rubber CoSteam hose	20.75
"	Reinecke & ZeschAdvertising	14.25
"	The Bell Telephone Co. Rent	163.50
"	John MesmerCoach hire	5.00
"	J. N. MatthewsAdvertising	6.00
"	The Pitts Agricultural	
	Works 29 in. boiler	425.00
"	F. S. PeaseOil casks	16.00
"	Joseph ChurchyardLabor, overhead bridge	17.41
"	W. H. H. NewmanGalvanized Iron	20.91
"	E. H. ButlerAdvertising	9.00
"	E. H. ButlerAdvertising	.42
"	Buffalo DemokratAdvertising	7.75
"	J. D. WarrenAdvertising	9.00
"	C. J. HamiltonLumber	56.31
Feb. 22.	Ulbrich & KingsleyStationery	31.50

Feb. 22.	The Courier CoAdvertising	\$ 6.25
**	T. CragierHorses	350.00
**	Scatcherd & Son Lumber	
44.	J. T. Ruckle & CoSundries	
**	G. C. Grimard, Cash'r. Pay roll, February	
44	G. C. Grimard, Cash'r. Weekly roll	
	W. C. McDonaldRemoving surplus dirt.	
Mar. t.	Holly Mfg. CoPartial payment on new engine	
Mar 8	R. Dunbar & Son 1 winch	
	Trunk Sewer Commis-	40.00
	sionRep. trench over water	
**	C. W. HollowaySand	
	Valentine & SonKeys	
* 16	Pratt & Letchworth Hub-wheels	
"		100
**	E. G. FelthousenRepairing gauge, etc	
- 11	C. J. Heinold	
11	C. J. Heinold Merchandise	
66	Becker & WickserStable supplies	3.00
"	Ulbrich & KingsleyMerchandise	4.75
"	Eddy Valve CoValves	
"	Felthousen & RussellSundries	21.89
"	H. H. Baker Co Manilla rope, etc	3.01
	A. M. EdwardsUse of chronometer	6.00
"	Matthews, Northrup &	_
	CoPrinting	38.00
**	Irlbacker & Davis Sundries	124.64
"	C. J. HamiltonLumber	37.76
Mar. 15.	• •	_
	pipe	8.50
4.6	J. G. Johnson Sundries	16.37
"	Sidney Shepard & Co2 10 gal. iron cans	1.88
"	D. A. Bailey Telephone use, etc	5.45
44	Goodyear Rubber CoGasket, etc	6 .96
"	G. C. Grimard, cash'rWages, laborers	259.66

Mar. 15. Mar. 22.	Howard Iron WorksFire hydrants Volker & Felthousen	\$4,508.50
Mai. 22.	Mfg. CoDuplex pumps, etc	181.00
44	Bickford & Francis50-inch packing	10.00
66	R. G. Drullard Carting valves	
66	Barnes, Hengerer & Co. Bags	3.00
"	•	4.80
"	Adams & WhiteStationery, etc	89.27
• •	Lesswing & StinesWagon repairs	125.50
	Walbridge & CoSundries	67.46
Mar. 29.	Powell & Plimpton Sundries	.65
	Pratt & LetchworthSteel castings	14.12
"	C. Frank	17.00
. "	Pratt & Co. Sundries	30.63
	G. C. Grimard, cash'rPay roll, March	1,931.32
April 5.	James BolandSand	30.00
	Buffalo Lubricat. Oil Co. Oil	5.98
	Holly Mfg. CoOn contract new engine	2,600.00
April 19.	G. C. GrimardWages, laborers	67.50
" "	James D. Warren Advertising	11.00
"	Goodyear Rubber CoSundries	20.95
	The Times Co. (lim.) Advertising	6.74
April 26.	Charles Suor Pine plugs	10.08
4.6	N. Y. C. & H. R. R. Co. Watching and repairing	
	tracks	28.90
"	A. R. KetchamValve boxes	78.02
4.6	G. C. Grimard, cash'rWages, laborers	1,158.34
"	G. C. Grimard, cash'rWages, month of April	1,770.54
Мау 3.	Buff. Cast-Iron Pipe Co. Cast-iron pipe	820.43
6.6	Buff. Cast Iron Pipe Co. Cast-iron pipe	1,437.98
• •	Buff. Cast Iron Pipe Co. Special castings	134.00
"	Buff. Cast-Iron Pipe CoCast-iron pipe	1,486.26
**	Buff. Cast-Iron Pipe Co. Special castings	200.72
**	Buff. Cast-Iron Pipe Co. Cast-iron pipe	546.23
44	Buff Cast-Iron Pipe Co Special castings	201.65
54	Buff. Cast-Iron Pipe Co. Cast-iron pipe	1,018.95
44	Buff. Cast-Iron Pipe CoCast-iron pipe	1,384.94

May 3.	Buff. Cast-Iron Pipe Co Cast-Iron pipe	\$2,855.12
- 11	Buff. Cast-Iron Pipe Co. Special castings	
46	G C. Grimard, cash'rWages, laborers	1,150.52
19	Saml. Somerville & Son. Bay horse	225.00
	W. C. McDonaldRemoving surplus dirt.	90.36
39	James BolandRe-paving	419.20
May 10.	Buffalo Gas Light CoCoke	18.00
- 11	Weed & CoSundries	18.15
44	Buffalo Lubricat. Oil Co. Oil.	6.04
**	Haas & KleinStationery	343.00
	G. C. Grimard, Cash'r. Wages, laborers	1,909.09
- 44	Lake Erie Boiler Works. Sundries	5.00
44	Eddy Valve CoValves	617.25
	Ulbrich & KingsleyTracing cloth	14.00
43	J. H. Ullenbruch & Co. Sundries	15.84
- 0	C. J. HamiltonSawing lumber, etc	15.11
41	Lesswing & StinesNew wagons, etc	523.00
13	C. W. MillerCoach hire	3.00
44	Eddy Valve CoValves	232.25
66	Eddy Valve CoValves	949-75
4.4	Scatcherd & SonLumber	14.14
	G. C. Grimard, Cash'r. Wages, laborers	1,309.56
May 17.	Holly Mfg. Co On contract for new	
	engine	250.00
4.6	Everett & PostPig lead	3,154.80
	Walbridge & CoSundries	16.39
May 24.	Everett & PostPig lead	1,583.04
"	H. H. Baker Sundries	13.30
"	Eddy Valve CoValves	622.50
"	Buff. Cast-Iron Pipe Co. Pipe and castings	105.05
"	Buff. Cast-Iron Pipe Co.Pipe and castings	10.22
6.6	Buff. Cast-Iron Pipe Co.Pipe and castings	304.97
• •	Buff. Cast-Iron Pipe Co.Pipe and castings	170.01
"	G. B. HayesPipe and castings	2,791.57
• •	G. B. HayesPipe and castings	1,859.55
4.6	Buff. Cast-Iron Pipe Co.Pipe and castings	2,317.52

May 24.	Buff. Cast-Iron Pipe Co.Pipe and castings	\$1,647.31
"	Buff. Cast-Iron Pipe Co. Pipe and castings	1,935.54
"	G. C. Grimard, Cash'r. Wages and laborers	
"	G. C. Grimard, Cash'r. Pay roll, May, 1886	
May 31.	Jos. BourgnonCharcoal	3.00
"	Howard Iron WorksRepairs	19.00
"	Farrar & TreftsTool repairs	109.84
"	Farrar & Trefts Engine repairs	4.40
66	Farrar & Trefts Engine repairs	16.69
"	G. B. HayesCast-iron pipe	1,909.90
"	James BolandRe-paving	1,938.72
"	Fries & CoCorporation cocks, etc	319.07
"	Hardwicke & WareVise	13.00
"	Eddy Valve CoValves	412.50
"	Eddy Valve CoValves	430.00
"	Smith & Becker, trustees. Bone	10.00
"	Eddy Valve CoValves	277 .75
"	Buff. Cast-Iron Pipe Co. Cast-iron pipe	2,421.80
"	U. S. Electric Light &	
	Power Co Incandescent machine	2,500.00
"	Buff. Cast-Iron Pipe Co Cast-iron pipe, etc	6,191 44
"	Buff. Cast-Iron Pipe Co Cast-iron pipe, etc	132.85
**	Buff. Cast-Iron Pipe Co Cast iron pipe, etc	316.78
66	Buff. Cast-Iron Pipe Co Cast-iron pipe, etc	4,635.88
4.6	G. B. HayesCast-iron pipe	1,973.42
44	Eddy Valve Co Valves	356.50
"	Eddy Valve CoValves	312.25
66	Charles J. HeinoldSundries	103.38
44	J. H. Ruckle & CoSundries	232.40
"	Walbridge & CoSledges	10.65
4.4	A. W. MorganValve boxes	648.34
".	Weed & Co Sundries	31.18
"	Western Union Tel. Co. Telegrams	8.99
"	G. C. Grimard, cash'rWages, laborers	1,729.17
"	Alexander FrancisMoving boilers	150.00
"	P. CunninghamExcavating	1,000.00

May 31.	P. Cunningham	Excavating	\$3,000.00
June 7.	G. C. Grimard, cash'r	.Wages, laborers	1,694.10
June 14.	G. C. Grimard, cash'r	Wages, laborers	1,876.94
**	P. Cunningham	Excavating	1,500.00
**	Eddy Valve Co	.Valves	366.25
- 66	Eddy Valve Co	Valves	322.00
- 66	John Mumm	Removing dirt	175.00
44	B. Cunningham	Blasting	45.50
44	J. W. Clark	Removing dirt	140.00
		Stationery	111.00
16	Buffalo Lubricat. Oil Co	.Oil	56.69
- 64	Farrar & Trefts	Sundries	19.50
- 64		Store-house tools	1,451.90
46	R. G. Drullard	.Carting	12.85
June 21.		Re-paving	328.94
***	G. C. Grimard, cash'r	Wages, laborers	1,670.20
June 28.		Re paving	2,483.32
**	Sidney Shepard & Co	.Water buckets and dip-	
		pers	3.65
"		Team horses	350.00
"		.Wages laborers	1,649.10
4.6		Pay roll, June	2,039.02
"		Excavating	4,500.00
"		.Cast-iron pipe, castings	3,748.01
"		.Cast-iron pipe, castings	144.76
66		.Cast-iron pipe, castings	2,107.09
4.6		.Cast-iron pipe, castings	1,120.24
"		Cast-iron pipe, castings	413.55
"	. •	.Cast-iron pipe, castings	453-33
"	•	Cast iron pipe, castings	1,605.46
"		Cast-iron pipe, castings	1,601.47
"	· ·	Carting	22.58
"		Use of Shop and Tools.	5.00
July 2.	Irlbacker & Davis	Sundries	65.78
"	•	Hydrants	1,202.75 7.8522

4.05

July 2.	Bott & Hughes Painting	\$ 44.93
4.6	S. ChamberlainWagon repairs	1.05
6.6	Irlbacker & Davis Sundries	8.87
"	W. C. McDonald Removing dirt	11.00
4.6	R. G. DrullardCartage	3.00
4.4	J. N. MatthewsAdvertising	17.50
**	W. & L E. Gurley Sundries	319.00
4.4	C. J. Hamilton Lumber	25.87
"	Walbridge & CoSledge	2.16
6.6	Charles SuorPine plugs	19.00
	Hardwicke & WareOne 3-inch Eddy valve.	9.00
6.6	S. D. ColieLumber	130.96
"	J. McCarthyTarred and manilla rope	339.80
"	John LythVit. pipe and elbows	90.00
"	Buffalo Forge Co	1,320.00
4.6	Weed & CoSundries	43.21
"	Buff. Gas Light CoLabor and material	111.35
July 12.	G. C. Grimard, Cash'r. Wages, laborers	1,842.43
"	G. C. Grimard, Cash'r. Wages, laborers	1,494.48
"	Holly Mfg. CoFinal payment on con-	
	tract, Gaskill engine	150.00
6.6	Becker & WickserHarness, repairs, etc	69.15
"	Howard H. BakerSundries	24.00
"	J. H. RuckleSundries	9.80
"	Fries & CoCorporation cocks	297.30
66	Buffalo Forge CoHydrants	758.50
"	Scatcherd & SonLumber	3.80
"	John A. LoveOne horse	200.00
"	N. Y. C. & H. R. R. Freight	2.71
6.6	N. Corwith & Co Lead	4,796.97
4.6	B. CunninghamExcavating	4,500.00
"	G. C. Grimard, Cash'r. Wages, laborers	1,808.92
"	B. CunninghamExcavating	2,400.00
July 19.	G. B. HayesCast-iron pipe	65.88
"	G. B. HayesCast-iron pipe	165.23
4.6	C R Haves Cast iron nine	4 0 7

G. B. Hayes.....Cast iron pipe.....

EIGHTEENTH ANNUAL REPORT OF

July 19.	G. B. Hayes Cast-iron pipe	\$ 6.50
***	James Boland Rep. boiler-house	
44	James Boland Electric light foundation	
44	James Boland Building valve boxes	
**	James Boland Re-paving	
- 66	Buff. Cast-Iron Pipe Co. Cast-iron pipe, etc	. 633.15
- 11	Buff. Cast Iron Pipe Co. Cast-iron pipe, etc	
	Buff. Cast-Iron Pipe Co. Cast-iron pipe, etc	
- 440	Buff. Cast-Iron Pipe Co. Cast-iron pipe, etc	
- 11	Buff. Cast-Iron Pipe Co. Cast-iron pipe, etc	
July 26.	Eddy Valve Co Valves	350.00
**	Lesswing & StinesWagon repairs	61.19
**	Buffalo Forge CoHydrants	
44	C. J. HeinoldSundries	
44	Bell Telephone CoRent Telephone	
44	Eddy Valve CoValves	350.00
- 11	U. S. Electric Light and	
	Power CoSafety strips	8.06
44	U. S. Electric Light and	
	Power Co Lamps, etc	. 68.00
4.6	Becker & Wickser Harness repairs	. 81.8 5
"	Buffalo Lub. Oil CoOil	
4.6	James BolandFoundations for No. 1	t
	Worthington engine.	. 1,036.43
4.6	Buff. Cast-Iron Pipe Co Cast-iron pipe, etc	. 3,148.59
4.6	Buff. Cast-Iron Pipe Co Cast-iron pipe, etc	. 91.18
"	Buff. Cast-Iron Pipe Co Cast-iron pipe, etc	
44	Buff. Cast-Iron Pipe Co. Cast-iron pipe, etc	
"	G. C. Grimard, cash'r Wages, laborers during	
	ad'g of Council	
"	G. C. Grimard, Cash'rWeekly roll	
"	G. C. Grimard, Cash'rPay roll, July	. 2,049.25
46	B. CunninghamExcavat'g Herkimer st.	
66	J. H. Ruckle & CoSteam-pipe contract	
Aug. 30.	R. G. DrullardCartage	
"	Jno. WittmanSharpening drills	3.80

Aug. 30.	G. C. Grimard, Cash'r. Pay roll, August\$	2,010.80
**	B. Cunningham Excavating	3,000.00
Sept. 6.	G. C. Grimard, Cash'r. Wages, laborers	958.20
Sept. 13.		918.37
- 11	Fries & CoCorporation cocks	548.90
**	Scatcherd & SonLumber	5.00
44	Buffalo Lubricat. Oil Co.Oils	5.64
**	Walbridge & CoSundries	12.40
Sept. 20.	James BolandRe-paving	332.48
- 0	A. W. MorganValve boxes	441.08
11	Hand & Johnson Tug service	50.00
44	M. E. Crow	125.56
44	James D. Warren Stationery and adv	20.50
16	S. Somerville & SonVeterinary services	42.00
44.	G. C. Grimard, Cash'rWeekly pay roll	741.60
46	J. H. Ruckle & Co Steam-pipe contract	200.00
Sept. 27.	Eddy Valve Co One 16-inch valve	78.25
14.5	Buffalo Forge Co Fire hydrants, etc	1,897-55
04	John T. Rees, RegWeekly pay roll.	751.00
- 11	John T. Rees, Reg Pay roll, Sept	2,055.15
6.6	James BolandRe-paving and repairs	368.84
Oct. 11.	Citizens' Gas Light CoCoke	27.00
4.6	J. J. McWilliamsCoal	9.50
	J. H. Ruckle & CoSundries	17.16
4.6	D. McNaughtonSundries	31.95
4.6	G. C. Grimard, Cash'rWages laborers	818.27
	P. G. StraubExcavating rock, Jeffer-	,
	son street	450.00
"	G. C. Grimard, Cash'rWages, laborers	793.24
"	Walbridge & CoSundries	4.20
"	Holly Mfg. Co Engine repairs	2,228.00
"	James D. WarrenAdvertising	7.00
"	The Times Co., limited. Advertising	3.50
	J. N. MatthewsAdvertising	4.50
	Schlund & DollDesk	15.00
	C. J. HeinoldSundries	224.56
		4.30

Oct. 25.	G. C. Grimard, Cash'r. Pay roll, October\$	2,058.03
- 10	G. C. Grimard, Cash'r. Wages, laborers	843.41
Nov. 8.	G. C. Grimard, Cash'r. Wages, laborers	540.73
**	Buff. Cast-Iron Pipe Co. Pipe and castings	204.27
**	Buff. Cast-Iron Pire Co. Pipe and castings	199.45
164	Buff. Cast-Iron Pipe Co. Pipe and castings	58.60
11	Buff. Cast Iron Pipe Co. Pipe and castings.	219.79
**	Buff. Cast Iron Pipe Co. Pipe and castings	912.41
44	Buff. Cast Iron Pipe Co. Pipe and castings	94.78
24	Buff. Cast Iron Pipe Co Pipe and castings	1,083.97
44	Buff, Cast-Iron Pipe Co Pipe and castings	.671.53
41	Buff. Cast-Iron Pipe Co Pipe and castings	153.91
Nov. 15.	P. Hickler Placing river buoy	60.00
**	S. D. ColieLumber	14.85
- 11	H. BurgeSaw-dust	21.00
- 11	Fries & CoSundries	370.58
-11	Farrar & Trefts Engine and boiler rep	507-37
166	J. ChurchyardLumber	369.84
- 66	Farrar & TreftsRemoving boiler, etc	540.84
- 11	Farrar & Trefts Repairs, old boilers,	
	lower engine-house	391.34
"	Jos. ChurchyardLabor, S. coal-shed for	0, 0,
	tunnel	300.49
"	Jos. Churchyard Roof, new boiler-shed	159.19
"	G. C. Grimard, Cash'r. Wages, laborers	553.08
"	Farrar & TreftsRep. boilers, contract	1,695,57
"	Farrar & TreftsRep. engine, No. 1 con-	, ,,,,,,
	tract	2,428.50
"	G. C. Grimard, Cash'rWages, laborers	254.80
Nov. 29.	C. J. HeinoldSupplies	47.22
"	Buffalo Forge Co Sundries	57.30
44	E. H. Butler Advertising	6 . 50
44	Sheeler & Sons Wire strainers	4.50
"	Scatcherd & SonLumber	2.07
"	W. C. McDonald Removing surplus earth.	100.00
"	John LythVit. pipe, etc	50.85

Co.Galvanized iron

1.98

THE BUFFALO CITY WATER WORKS.

Lee, Smith & Moore.....One ton coal

Lee, Smith & Moore.....One ton coal.....

Banner Milling Co.....Feed.....

J. J. McWilliams, Ag't.. Coal

Wm. C. McDonald.....Sand.....

4.00

29.25

4.00

8.40

17.80

"

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"

"

"

Feb. 12	Eddy Valve CoValves	\$ 42.00
11	Wheeler & Davis 1/2-inch chain	2.25
-16	Joseph BourgnonCharcoal	1.50
66	Howard Iron Works Hydrants	228.00
	Lake Erie Boiler Works. Boiler repairs.	80.84
	Haas & KleinSundries	105.50
**	Pratt & CoSundries	63.63
- 44	Becker & Wickser Harness repairs	25.90
311	S. ChamberlainWagon and sleigh rep	35.86
40	G. C. Grimard, Cash'r. Weekly roll, laborers	
Feb. 22.	Ulbrich & Kingsley Stationery	258.79
44	Banner Milling Co. Feed	2.25
- 44	Jacob AmesburyGumming and filing	8.40
	saws	9.52
	Becker & WickserSundries	1.25
**		55.80
**	J. H. Ruckle & Co. Sundries	29.27
44		51.86
	G. C. Grimard, Cash'r. Pay roll, February	3,230.64
	G. C. Grimard, Cash'r. Weekly pay roll. G. C. Grimard, Cash'r. Weekly pay roll.	294.12
Mar. o.	G. C. Grimard, Cash'r. Postage stamps	264.66
	Weed & CoSundries	25.00
44		14.86
"	Barnes, Hengerer & Co Remnant carpeting Hammond & Guild One clock	6.00
"	· ·	1.00
44	H. H. Baker & CoSundries	2.57
"	Thos. Conboy	192.57
"	C. W. HollowaySand	11.25
	C. W. HollowaySand	5.63
"	Bingham & TaylorHub wheels	3.10
"	E. G. Felthousen Rep. gauge, etc	10.75
"	C. J. Heinold Merchandise	17.76
"	Becker & WickserStable supplies	6.02
"	Lee, Smith & MooreCoal	4.00
"	Ulbrich & KingsleyMerchandise	2.25
"	Brady & MaltbyLabor	2.40
4.6		3.20

	THE BUFFALO CITY WATER WORKS.	57
Mar. 8.	Lake Erie Boiler WorksRepairing boiler	\$ 4.55
66	H. H. Baker & CoManilla rope, etc	.42
44	Jabesh HarrisSoft soap	10.00
"	Lesswing & Stines Material	11.50
4.6	H. McDonald Horseshoeing	6.40
Mar. 15.	G. B. Hayes Cast iron pipe	259.66
"	J. J. McWilliamsCoal	13.80
"	W. G. Dixonroo lbs. boiler compound	10.00
	J. H. RuckleSundries	9.30
"	Goodyear Rubber CoGaskets, etc	7.62
Mar. 22.	Volker & Felthousen	
•	Mfg. Co Duplex pump, etc	175.00
"	Buffalo Democrat Advertising	10.50
"	Haas & Klein Printing	168.15
"	Tifft Furniture Co Four chairs	6.00
"	Adams & WhiteStationery, etc	72.17
"	Walbridge & Co Sundries	6.80
""	G. C. Grimard, Cash'r. Weekly wages, laborers.	264.27
Mar. 29.	National Meter Co Spindles for meter	1.50
"	Powell & PlimptonSundries	.70
"	G. C. Grimard, Cash'rWages, laborers	127.90
"	G. C. Grimard, Cash'r. Pay roll, March	3,862.66
"	Lehigh Valley Coal Co. To apply on coal con-	
	tract	857.81
April 5.	James BolandRepairing sewer	7.95
"	John C. PostPaint	2.35
"	National Meter CoSpindles	1.50
"	S. A. HusonClock repairs	4.10
"	Buff. Lubricat. Oil CoOil	79.03
"	G. C. Grimard, Cash'r Wages, laborers	214.24
April 15.	G. C. Grimard, Cash'r. Postage stamps	50.00
"	G. C. Grimard, Cash'r. Wages, laborers	153.88
April 19.	The Courier Lith. CoStationery	15.60
	G. B. Hayes. Feed	50.72
"	Goodyear Rubber CoSundries	6.00
"	C. W. HallowaySand	15.00

• .

69.50

59	THE BUFFALO CITY WATER WORKS.	
\$ 32.81	Goodyear Rubber CoPure packing	May 31.
4.00	D. J. StickneyCoal	"
9.00	Buffalo Gas Light Co Coke	"
21.00	James Coyle Wheelbarrows	"
.90	John C. PostLamp-black	"
50.00	C. J. Hamilton Lumber	"
3.50	Lake Erie Boiler Works Repairing boiler	"
5.5	Howard Iron WorksRep. elevator register	"
	Volker & Felthousen	
103.21	Mfg. CoRepairing feed pumps	
50.00	G. C. Grimard, Cash'r. Postage stamps	June 7.
18.2	H. H. Baker & CoSundries	"
39.00	Haas & Klein Stationery	66
84. 10	Buff. Lubricat. Oil CoOil	"
54.1	Farrar & Trefts Sundries	4.6
328.9.	James BolandRe-paving	June 21.
4,078.0	G. C. Grimard, Cash'r. Pay roll, June	"
36.8	H. H. Wolfe Feed	"
16.99	a a	July 2.
3.5.	Irlbacker & Davis Sundries	"
23.0	James D. WarrenStationery	4.6
1.4	John C. PostVen. red and putty	6.6
24.00	Buffalo Gas Light CoCoke	٤.
•	Lehigh Valley Coal CoOn coal contract	July 19.
60.4	J. H. Ruckle & CoSundries	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
9.2	Hugh McDonaldHorseshoeing	
27.6	Adams & WhiteStationery	66
13.8	Gates & JetterRepairing files	44
2.5	The Times CoTwo copies Daily Times.	"
8.2	Virgiel AyersWhitewashing, etc	"
75.2	James Boland Re-paving	"
5·7.		July 26.
10.0	J. Harris Soft soap.	, ury 20.
4.0	D. J. StickneyCoal	4.6
4.5	Urban & CoFeed	44
	Ulbail & Commission Cod Commission Commission	

July 26.	Bell Telephone Co	Rent of phone	\$ 60.00
**		Feed	101.10
16	Star Oil Co	.Oil	71.22
**		.Gaskets	- 2.62
66	Buff. Lubricat. Oil Co	.Oil	90.80
**	Star Oil Co	Oil	18.73
11	G. C. Grimard, Cash'r.	Pay roll, July	4,098.52
July 30.		Roofing	18.70
**	J. C. Post	Sundries	7.60
44		Oil	75.08
66	Buff. Lubricat. Oil Co	.Oil	13.77
44	Henry Borge	.Sawdust	19.87
44	Eddy Valve Co	.Valves	116.75
11	Haas & Klein	Stationery and printing.	9.00
34		Stationery and printing	105.00
44	National Meter Co	Meter repairs	9.00
**	Goodyear Rubber Co	.Gaskets, etc	19.51
**		Meter repairs	19.50
11		.Oil	32.40
	Weed & Co	Sundries	8.05
Aug. 30.	Pratt & Co	.Sundries	18.11
"	The Courier Co	.Two city directories	8.00
"	Farrar & Trefts	Sundry repairs	88.76
"	G. C. Grimard, Cash'r.	.Pay roll, August	4,121.60
Sept. 6.	J. H. Horton, Ag't	Partial payment on coal	
		contract	6,000.00
"	S. Chamberlain	Repairing wagons	38.47
"	Becker & Wickser	Harness repairs, etc	29.80
"	Haas & Klein	.Printing	6.00
Sept. 13.	D. J. Stickney	.Coal	4.00
"	Holly Mfg. Co	Butts and nuts	3.00
"	Walbridge & Co	.Sundries	6 87
"	Buff. Lubricat. Oil Co	.Oils	75.28
	James Boland	Re-paving, etc	345.20
44	Powell & Plimpton	Sundries	8.25
4.6	Adams & White	Stationery	15.55

Oct. 25.	James Franklin		\$ 36.50
45	J. H. Ruckle & Co S		90.86
98	Felthousen & Whittet R	kep. machinery, lower	
		engine house	65.19
44	G. C. Grimard, Cash'r P	ay roll, October	4,116.08
Nov. 15	Urban & CoF	eed	4.05
11	Felthousen & RussellE	Engine repairs	90.92
- 11	Holly Mfg. Co	Rep. feed pumps	10.45
9:	Buffalo Gas Light Co,C	oke	12.00
(6)	John C. PostP		2.25
- 66	French & Kirkholder F	Baskets	2.00
**	U. S. Electric Light Co. S	undries	6.00
24	Weed & CoS		1.18
**	S. ChamberlainV	Vagon repairs	54.96
- 11	G. C. Grimard, Cash'rP		50.00
Nov. 29.	C. J. HeinoldS		5-53
**	B. HammersmithS		11.43
- 41	H. H. BakerS		-37
94	Haas & KleinC	~	6.00
11	Brady & MaltbyC		10.00
66	Buff. Lubricat. Oil CoC		43.25
"	Western Union Tel. CoS		.0 5
		and telephones	1.35
"	National Meter CoC	-	6.00
"	Jos. RehmW		10.00
4.6	Star Oil CoO		122.46
4.6	J. J. McWilliamsC		5.00
66	Adams & WhiteS		19.75
"	J. H. Horton, AgtC		5,000.00
"	G. C. Grimard, Cash'rP		3,942.98
Dec. 20	James BolandR		574.46
"	Irlbacker & DavisS		46.02
"	J. H. RuckleS		59.52
	Valentine Young & Son. B		11.00
"	Goodyear Rubber CoP		5.20
"	Sidney Shepard & CoS	•	3.20

	THE BUFFALO CITY WATER WORKS.	63
Dec. 20.	J. J. McWilliams & CoCoal	\$ 10.00
"	S. Chamberlain Repairs to wagons	14.03
"	Urban & CoFeed, etc	3.90
6.6	Ludlow Valve Mfg. Co. Rubber rings for 4-inch	
	gate	6.00
"	D. J. StickneyCoal	4.00
"	Walbridge & CoSundries	8.20
"	Hardwicke & Ware Brass valves and fitting	52.64
"	Hall & SonsFire brick, clay, etc	53.00
"	Ludlow Valve Mfg. Co Supplies, store-house	9.90
"	H. G. WhiteLettering cash boxes	2.25
"	C. J. HamiltonLumber, etc	4.50
"	Buffalo Gas Light CoCoke	3.00
"	Valentine & SonLocks and repairs	2.60
"	Powell & PlimptonSundries	4.69
"	D. McNaughton Lug bands, etc	6.00
"	Hawley Klein Block	2.00
66	Goodyear Rubber Co. Sundries	19.27
4.6	Haas & KleinPrinting, etc	49.00
4.6	Becker & WickserŞundries	54.25
"	Bott & HughesPainting, etc	20.37
"	S. A. HusonClock repairs	3.00
"	J. H. Horton, AgtCoal, bal. on contract	4, 189.05
"	G. C. Grimard, Cash'r Postage stamps	50.00
Dec. 27.	G. C. Grimard, Cash'rPay roll, December	3,843.74
"	J. E. BarnardGas bills, 1886	1,162.35

SERVICES.

There were inserted three thousand seven hundred and three new taps during the year.

The total number of services in the city, January 1, 1887, is twenty-six thousand four hundred and thirty-eight.

Respectfully submitted,

JOHN T. REES,

Registrar.



DISTRIBUTION

OF THE

WATER DEPARTMENT

FOR THE

YEAR 1886.



DISTRIBUTION

OF THE

WATER DEPARTMENT

FOR THE

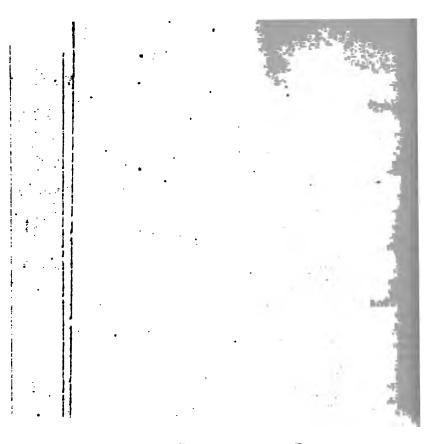
YEAR 1886.



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THE NEW YORK
PURE AND AND
THEN FOUNDATIONS.

VALVES.

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COST PER FOOT.

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FIRE HYDRANTS.

The number of Fire Hydrants placed during the year on new line of mains was one hundred and eighty, of which one hundred and twenty-six was on the reservoir supply, and fifty-four on the high service supply, making the total number in the city, December 31, 1886, one thousand nine hundred and sixty three. Following schedule gives location of hydrants set during 1886:

Location.	System.	Sewered.
Adams street, northwest corner of Eagle	R.	S.
Austin street, southwest corner of East		".
Austin street, center of block between East and Thomp-		
son	"	"
Austin street, southeast corner of Thompson.	"	4.6
Austin street, southeast corner of Gorton	"	"
Austin street, southwest corner of Tonawanda		44
Anderson place, southwest corner of Elmwood ave	Н.	4.6
Alabama street, at the Erie Railroad	R.	
Arkansas street, southwest corner of Hibbard	Н.	
Arkansas street, southwest corner of Barton	"	
Alabama street, southeast corner of Scott	R.	
Bouck avenue, northwest corner of Herkimer	H.	
Bouck avenue, southwest corner of Main	4.6	
Bouck avenue, center of block between Main and Michi-		
gan	4.6	
Bouck avenue, northwest corner of DeWitt	"	"
Bouck avenue, center of block between DeWitt and		
Herkimer		"
Bouck avenue, southwest corner of Chapin place	"	
Bouck avenue, southwest corner of Elmwood avenue	"	
Bouck avenue, northwest corner of Emily	"	
Bouck avenue, southwest corner of Baynes	" .	
Bouck avenue, southeast corner of Bidwell place	"	
Bouck avenue, northeast corner of Chapin place	4.6	
Bouck avenue, center of block between Elmwood and		
Delaware avenues	44	•

Location.	System.	Sewered.
Bristol street, southwest corner of Montgomery	R.	
Bristol street, southwest corner of Raze		
Breckenridge street, southwest corner of Herkimer	. H.	S.
Broadway, northwest corner of Beck	. R.	
Broadway, northwest corner of Bowen		
Broadway, northwest corner of Sweet		
Broadway, northwest corner of Rother		
Broadway, northwest corner of Schwarback		
Broadway, northwest corner of Goodyear		
Broadway, northwest corner of Little		
Broadway, northwest corner of Husback		
Broadway, northwest corner of Shepard		
Broadway, northwest corner of Gatchell		
Brayton street, center of block between Massachusetts		
and Rhode Island		
Coit street, west side, 277 feet north of Lovejoy		44
Coit street, west side, 280 feet south of Broadway		**
Chester street, center of block between Ferry and Rail		
road	**	**
Chester street, southwest corner Railroad		**
Chester street, center of block between Railroad and		
Puffer		"
Chester street, southwest corner of Barr		44
Chester street, southwest corner of Ferry		66
Clinton avenue, northeast corner of Niagara	•	44
Congress street, southwest corner of Clinton avenue		
Carroll street, northwest corner of Hydraulic		
· · · · · · · · · · · · · · · · · · ·		
Carroll street, northwest corner of Griffin		
Carroll street, north side, 400 feet east of Griffin	•	"
California street, southwest corner of Hibbard		"
California street, southwest corner of Barton		••
California street, southwest corner of Herkimer		
Clark street, center of block between Lovejoy and		
Peckham		
Clark street, center of block between Peckham and		
Curtis	. "	



Location. Clark street, southwest corner of Peckham		Sewered.
Church street, northeast corner of Jackson		
DeWitt street, southeast corner of Bradley		s.
Detroit street, west side, 320 feet north of William		"
Detroit street, west side, 317 feet south of Peckham		
Detroit street, west side, center of block between Peck		
ham and Lovejoy		46
Dearborn street, southwest corner of Austin		
Dearborn street, northwest corner of Parish		
Dearborn street, center of block between Parish and		
Amherst		
Dearborn street, center of block between Amherst and		
Hamilton		
Dearborn street, southwest corner of Hamilton		"
Dearborn street, center of block between Hamilton and		
Austin	. "	4.6
Dearborn street, center of block between Austin and	i '	
Farmer	. "	6.6
Dearborn street, southwest corner of Hertel avenue	. "	46
Elm street, southwest corner of Clinton	. "	44
Elm street, center of block between Broadway and	i	
Sycamore		
Elm street, northwest corner of Sycamore		
Elm street, center of block between Sycamore and		
Genesee		
Elm street, southwest corner of Genesee		
Eagle street, northwest corner of Union		
Eagle street, center of block between Michigan and		
Union .		
Euclid place, northwest corner Abbott road		
Euclid place, northwest corner of Prenatt		
Emily street, southwest corner of Clinton	•	
Eaton street, south side, 475 feet east of Masten		
Eaton street, south side, 475 feet west of Jefferson	•	
Fulton street, south side, so feet east of Erie R. R	. R .	

Location.	System.	Sewered.
Fulton street, south side, in front of No. 607.	R.	
Fulton street, south side, in front of No. 645	H	
Fillmore avenue, west side, between Peckham and	B	
Lovejoy	. 64	
Fillmore avenue, southwest corner of Lovejoy	- 64	
Fillmore avenue, west side, 300 feet north of Broadway.	**	
Fillmore avenue, west side, 400 feet south of Broadway.	- 11	
Farmer street, southwest corner of Gorton		S.
Farmer street, southwest corner of Tonawanda		44
Fitzgerald street, northwest corner of Sandusky		
Gorton street, center of block between Amherst and		
Hamilton	11	
Gorton street, west side, between Hamilton and Austin.		
Gorton street, west side, between Austin and Farmer.		
Gorton street, southwest corner of Hertel avenue.		
Genesee street, northeast corner of Niagara square		
Grant street, northeast corner of Arkansas.		
Glenwood avenue, southeast corner of Verplanck		
Herman street, center of block between North and Best		44
Hoyt street, southwest corner of Clinton avenue		4.6
Hamilton street, northwest corner of Gorton		4.
Hertel avenue, northwest corner of East		4.6
Herkimer street, northwest corner of Auburn		• •
Herkimer street, southwest corner of Helen		4 -
Indiana street, southeast corner of Mary		
Johnson street, center of block between North and Best		
Jersey street, northwest corner of Plymouth avenue		"
Jersey street, northwest corner of Front avenue		"
Jefferson street, southwest corner of Florida		
Jefferson street, west side, 337 ft. south of main		
Jefferson street, southwest corner of Delavan avenue		66
Jefferson street, west side, 300 ft. north of Delavan ave.		
Jerry street, northeast corner of Raze		
Kentucky street, northwest corner of St. Clair		
Lewis street, center of block between Clinton and Nor-		
T7 1 T1		

Location,	System.	Sewered.
Lovejoy street, southwest corner of Gibson	R.	
Lovejoy street, southwest corner of Lombard	. "	
Lovejoy street, southwest corner of Clark	. "	
Lord street, southwest corner of North Division	. "	S.
Ludington street, northwest corner of Garfield		
Ludington street, northwest corner of Scheller	. "	
Ludington street, northwest corner of Goethe	. "	
Ludington street, northwest corner of Gould	. "	
Ludington street, northwest corner of Benzinger	. "	
Ludington street, northwest corner of Davy	. "	
Maurice street, center of block between Elk and Perry		
Maurice street, southwest corner of Perry	. "	
Maurice street, center of block between Seneca and		
Perry		
Michigan street, southwest corner of Delavan avenue		
Michigan street, northwest corner of Bouck avenue		
Masten street, southwest corner of Barr		
Meyers street, southwest corner of Best		
Mechanic street, southeast corner of Stevens	. R.	
Mechanic street, south side, at canal	. "	
Norton street, south side, between Lewis and Babcock.		
North Division street, southwest corner of Bond		
Northampton street, center of block between Michigan		
and Masten		"
North street, southwest corner of Rose		
Oneida street, southeast corner of Montgomery		"
Oneida street, southeast corner of Raze		44
Orlando street, southwest corner of Seneca		
Orlando street, center of block between Seneca and		
Perry		
Ohio street, northeast corner of street	. "	
Peabody street, west side, 300 feet south of Seneca		
Peabody street, west side, 600 feet south of Seneca		
Peabody street, southwest corner of Perry		
Penhady street center of black between Perry and File		

Location.	System.	Sewered.
Plymouth avenue, center of block between Hampshire		
and Massachusetts	H.	
Pennsylvania street, south side, opposite Fourteenth	**	S.
Porter street, center of block between Van Rensselaer		
and Hydraulic	R.	
Raze street, northwest corner of James	**	166
Reed street, west side, 400 feet south of James		44
Reed street, west side, 450 feet north of Sycamore		
Shumway street, center of block between Peckham and		
Lovejoy	44	
Shumway street, southwest corner of Lovejoy	**	
Shumway street, center of block between Lovejoy and		
Broadway	44	**
Sherman street, center of block between North and Best	H.	
Smith street, southwest corner of Bristol	R.	
Scott street, southwest corner of Mississippi	**	
Scott street, southwest corner of Clark and Skinner		
Canal	**	
Southampton street, southwest corner of Jefferson	H.	S.
Southampton street, south side, 500 feet west of Jefferson	- 46	66
Southampton street, south side, 507 feet east of Masten	"	"
Sweeney street, southwest corner of Best	"	
Sycamore street, northwest corner of Reed	R.	
Sycamore street, northwest corner of Guilford	"	
Townsend street, northwest corner of William	"	"
Townsend street, west side, in front of No. 70	"	
Townsend street, west side, in front of No. 34	"	
Townsend street, southwest corner of Lovejoy	"	
Troupe street, center of block between Seneca and		
Wescott	"	
Troupe street, southwest corner Westcott	"	
Thomas street, center of block between Howard and		
William	"	
Thompson street, center of block between Amherst and		
Hamilton	"	**

Location.	system.	Sewered.
Thompson street, center of block between Austin and		
Farmer	R.	"
Thompson street, center of block between Hamilton and		
Austin	"	"
Tennessee street, west side, near Erie R. R.	"	
Utica street, southwest corner of Hauf	H.	
Walter street, southeast corner of Seneca	R.	•
Walter street, west side, 300 feet south of Seneca	"	
Walter street, west side, 250 feet north of Perry	4.6	
R. Reservoir supply.	_	-6
		26
H. High service		54
II-d	-	— 18o
Hydrants set in previous years		1,783
Total hydrants in city December 31, 1886		1,963
FIRE RESERVOIRS.		
Location.		Number.
Location.		I
Location. Main street, in front of Spaulding's Exchange		I
Location. Main street, in front of Spaulding's Exchange Main street, in front of Lafayette Park		I
Location. Main street, in front of Spaulding's Exchange. Main street, in front of Lafayette Park. Main street, in front of churches		I I I
Location. Main street, in front of Spaulding's Exchange Main street, in front of Lafayette Park Main street, in front of churches Main street, corner of Exchange		I I I I
Location. Main street, in front of Spaulding's Exchange		I I I I I
Main street, in front of Spaulding's Exchange		I I I I I
Location. Main street, in front of Spaulding's Exchange		I I I I I I
Location. Main street, in front of Spaulding's Exchange. Main street, in front of Lafayette Park. Main street, in front of churches. Main street, corner of Exchange. Main street, corner of Seneca. Main street, corner of Swan. Main street, corner of North Division. Main street, corner of Eagle.		I I I I I I I
Location. Main street, in front of Spaulding's Exchange. Main street, in front of Lafayette Park. Main street, in front of churches. Main street, corner of Exchange. Main street, corner of Seneca. Main street, corner of Swan. Main street, corner of North Division. Main street, corner of Eagle. Main street, corner of Genesee.		I I I I I I I I
Location. Main street, in front of Spaulding's Exchange. Main street, in front of Lafayette Park. Main street, in front of churches. Main street, corner of Exchange. Main street, corner of Seneca. Main street, corner of Swan. Main street, corner of North Division. Main street, corner of Eagle. Main street, corner of Genesee. Seneca street, corner of Chicago.		I I I I I I I I I I
Location. Main street, in front of Spaulding's Exchange. Main street, in front of Lafayette Park. Main street, in front of churches. Main street, corner of Exchange. Main street, corner of Seneca. Main street, corner of Swan. Main street, corner of North Division. Main street, corner of Eagle. Main street, corner of Genesee. Seneca street, corner of Chicago. Goodell street, corner of Washington.		I I I I I I I I I I I I
Location. Main street, in front of Spaulding's Exchange. Main street, in front of Lafayette Park. Main street, in front of churches. Main street, corner of Exchange. Main street, corner of Seneca. Main street, corner of Swan. Main street, corner of North Division. Main street, corner of Eagle. Main street, corner of Genesee. Seneca street, corner of Chicago. Goodell street, corner of Washington. Niagara square, junction of Genesee and Court.		I I I I I I I I I I I I I
Main street, in front of Spaulding's Exchange. Main street, in front of Lafayette Park. Main street, in front of churches. Main street, corner of Exchange. Main street, corner of Seneca. Main street, corner of Swan. Main street, corner of North Division. Main street, corner of Eagle. Main street, corner of Genesee. Seneca street, corner of Chicago. Goodell street, corner of Washington. Niagara square, junction of Genesee and Court. Niagara street, corner of Mohawk.		I I
Main street, in front of Spaulding's Exchange. Main street, in front of Lafayette Park. Main street, in front of churches. Main street, corner of Exchange. Main street, corner of Seneca. Main street, corner of Swan. Main street, corner of North Division. Main street, corner of Eagle. Main street, corner of Genesee. Seneca street, corner of Chicago. Goodell street, corner of Washington. Niagara square, junction of Genesee and Court. Niagara street, corner of Mohawk. Eagle street, corner of Genesee.		I .

DRINKING FOUNTAINS.

Location.	Number.
Delaware avenue, corner of Court	1
Main street, corner of Seneca	. 1
Main street, corner of Erie	. 1
Main street, opposite Court	1
Main street, corner of Huron	1
Michigan street, corner of Seneca	1
Michigan street, corner of Broadway	1
Michigan street, corner of Genesee	
Washington Market	1
Total	- 9

HORSE FOUNTAINS.

Location N	umber.
Broadway, in front of Arsenal	1
Elk street, between East and West Market	T
Elk street, front of Atlas Refining Company	I
Elk street, corner of Hamburg	1
Erie street, between Seneca and Terrace	1
Forest avenue, opposite No. 54	I
Genesee street, between Lower and Upper Terrace	I
Genesee street, corner of Ellicott	I
High street, corner of Genesee	1
Main street, corner of Ferry	1
Main street, corner of Steele	1
Maryland street, corner of Fifth	i
Niagara street, between Eagle and Franklin	I
Niagara street, corner of Prospect avenue	I
Niagara street, corner of Clinton avenue	1
Niagara street, corner of Amherst (old style)	I
Niagara street, corner of Austin (old style)	1
Niagara street, corner of Hertel avenue	1

Swan street at innetion with Sancas	
Swan street, at junction with Seneca	
West avenue, between York and Porter avenue	
York street, corner of Thirteenth	
Total	:
FREE HYDRANTS.	
Location	Numb
Chicago street, northwest corner of Mackinaw	
Chicago street, southeast corner of Elk	• • • • • • • • • • • • • • • • • • • •
Chicago street, southeast corner of Fulton	
Elk street, northeast corner of Columbia	
Elk street, southeast corner of Moore	•••••
Elk street, southeast corner of Hamburg	
Exchange street, north side, between Jefferson and Hambu	urg
Exchange street, northwest corner of Heacock	
Fifth street, northwest corner of Georgia	
Fourth street, northeast corner of Carolina	
Louisiana street, east side, between Ohio and South	••. • • • • • • • • • • • • • • • • • •
Louisiana street, northeast corner of Sandusky	
Mackinaw street, southeast corner of Tennessee	•••••
Mackinaw street, southwest corner of Vandalia	
Perry street, southwest corner of Illinois	
Perry street, southeast corner of Hamburg	•••••
,,	•••••

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PUMPING DEPARTMENT, 1886.

PUMPING DEPARTMENT.

PUMPING ENGINES, AND THEIR CAPACITY PER 24 HOURS.

I. Lower House.

Engine	No.	ı,	Worthington	 10,000,000	gallons.
**	"	2,	" .	 15,000,000	4.6
		0,		 •	
4.6	"	4,	Gaskill	 5,000,000	

II. Upper House (Distributing).

Engine	No.	2,	Holly	***************************************	<u>.</u> .	6,000,000	gallons.
"	"	Ι,	"	Reserve		3,000,000	"
Water 1	pump	ed	, 1886		12	2, 169,882,676	"
**	"		1885		10	,441,393,340	"
Ir	стеа	se,	1886 [.]		_	1,728,489,336	gallons.

DAILY SUPPLY.

The average daily supply for the year 1886 was thirty-three million three hundred and forty-two thousand one hundred and forty four gallons, an increase of four million seven hundred and thirty five thousand five hundred and eighty-seven gallons over the previous year. On the following days the greatest and least amounts were pumped:

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GREATEST AMOUNTS PUMPED.

Thursday, February 4, 1886	50,062,888	gallons.
Friday, February 5, 1886	50,347,076	
Thursday, December 30, 1886	49,607,100	**

LEAST AMOUNTS PUMPED.

Sunday, April 25, 1886	24,927,400	gallons.
Sunday, May 16, 1886	22,325,200	**
Sunday, October 3, 1886	24,920,220	111

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DUTY OF ENGINES.

	Low Se	RVICE.	HIGH SERVICE.			
	WORTHINGTON,		GASKILL.	WORTHINGTON.	GASKILL.	
}	No. 2.	No. 3.	No. 1.	No. 3.	No. 1.	
700	49,738 374 43,297,128 46,370,268	49,097,622 44,894,808 43,285,788			97,773,228 98.556,796 97,233,343	
i)	47,142,732 46,774,795 45,720,058 49,438,040	42,649,194 51,376,147 47,136,751	66,586,884 69 057,097	54,350,016 55,068,350 52,255,526	96,192,280 * *	
3.4 K.S	40,333,860 47,496,960 45,002,412	48.242,460 50,980,070 50,213 218				
3	44,791,202 41,616,139	40,111,680 42,575,383				
þ	45 643,497	46,414,829	67,821,991	53,891,297		
4	46,717.242	47,422,514		55,238,928		

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